FIELD TRIP REPORT

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ROLL NO. - BCP/16/192

COURSE - B. Com (Prog.)

ASSIGNMENT:-

Q1. Write a brief introduction about Yamuna Biodiversity Park.

Emerging as the capital most visited public place and prominent center for learning and understanding the Environment, the Yamuna Biodiversity Park has become a home for a diversity of forest communities, biologically rich wetlands, grassland communities, a wide variety of fruit yielding species and an abundance of Medicinal herbs.

Yamuna Biodiversity Park, located on Yamuna river is a 9770 hectares biodiversity area in Delhi, India. It is developed by Delhi Development Authority (DDA) with the technical help of Centre of Environment Management of Degrated Ecosystem (CEMDE), University of Delhi. The park comprises of Native flora & fauna, used to exist many decades before and then became extint locally. It further, acts as a natural conservation site for specific group of endangered plants.

The Yamuna Biodiversity Park was developed in two Phases in two different areas — on the inactive floodplain of the river is phase I and on the active floodplain in phase II. Phase I is spread out over an area of 157 acres near the village of Wazirabad. Around 100 species of grass were planted as an early measure to ameliorate the quality of soil. Many species of grasses such as LEPTOCHLOA FUSCA, VETIVERIA ZIZANOIDES, BOTHRIOCHLOA species, CENCHRUS CILIARIS, CENCHRUS SETIGERUS etc. along with many native legume species such as RHYNCHOSIA Species, INDIGOPHERA TINCTORA, INDIGOPHERA LINIFOLIA, SESBANIA SESBAN etc. were utilized not just to Increase the Nutrient Level but also initiate microbial activities in the Soil.

The park is divided into two zones – the 'visitors zone' and the 'nature reserve zone'. The major components of the visitors zone are the 'conservatory of medical plant', 'butterfly garden', 'rangelands', 'sacred grove', 'acacia woodland', 'migratory ducks' wetland', 'resident ducks wetland', and 'conservatory of fruit-yielding species.'

• The conservatory of medical plants consist of over 300 plant species known to have therapeutic values. Some of the most important herbs planted here are ASHWANGANDHA (Withania somnifera), artimisia, SARPAGANDHA (Rauwolfia serpentine), NIRGUNDI (Vitex Negundo) and ISABGOL (Plantago major). A climber grove was also created here for climbers for medicinal importance such as DAMA BEL (Tylophora Indica), GURMAR (Gymnema Sylvestre), antmool (Celastrus Paniculata). A small lily pond in the medical garden house aquatic plants such as BRAHMI (Bacopa Monerii) and BACH (Acorus Calamus).

• In the Natural Zone, around 30 forest communities have been developed which offer multiple micro-niches and habitats for a diversity of animal species to live and breed in. The wetlan also harbour aquatic vegetation, fish, daffodils, dragonflies & microorganisms that were once found in river Yamuna but have now ~~disappeared~~ disappeared. Presently, these wetlands also receive flocks of Migratory Birds (Around 5000) from Siberia and other Palearctic regions every year. Some Notable species are the 'RED-CRESTED POCHARD', 'NORTHERN SHOVELLOR', 'EURASIAN WIGEON', GADWALL etc. In addition, many resident birds have made the park's wetlands their home. The 'SPOT-BILLED DUCK', 'INDIAN MOORHEN', 'LESSER WHISTLING TEAL', 'PURPLE MOORHEN' and 'GREY, PURPLE HERONS' are a few species of this. The Darter, also called 'SNAKE BIRD

is a near-threatened species which nests in the Wetland of YBP each Year.

Phase II of the Yamuna Biodiversity park is spread over an area of 300 ar acres on the active floodplain of the river and consists of a masaic of wetlands together with grasslands and floodplains forests. The wetlands, which are in an area of around 100 acres, are presently under development and have already started attracting a diversity of resident and Migratory birds such as 'GREY HERONS', 'PAINTED STORKS', 'SPOONBILLS', 'OPEN-BILLED STORKS', 'RED CRESTED POCHARDS', 'WAGTAILS' and 'SANDPIPERS'. Once completed, this masaic of wetlands will impound floodwaters to the extend of Around 500 Million gallon, recharge aquifers during dry months, minimize the impact of flood water on the Wazirabad barrage & Reduce Siltation of the Reservoir

Thus, the Yamuna Biodiversity Park harbours a wide range of ecosystems indigenous to the Yamuna River basin & supports more than 1,500 plant and aminal species.

Biodiversity Park with their rich flora & fauna, managed & developed using scentific expertise are ideal instruments for promoting conversation education that will Ultimately have a positive impact on environment quality & conversation ethics. These parks offer a wide Range of opportunities for people to learn and adapt the ways and means by which they may live in harmony with Nature. The Yamuna Biodiversity Park is also an open-air Laboratory for a range of Students & Researches. Around 10,000 Students/ trainess/ nature lovers from School, Collages, institution & NGO's visit it every year.

Q2. Explain functions of an Ecosystem.

An Ecosystem is a community of living Organisms in conjunction with the non-living components of their environment, interacting as an system. The Biotic and Abiotic components are linked together through nutrients cycles & energy flows.

FUNCTIONS;

(i) Trophic Structure - Producers and Consumers are arranged in ecosystem in a definite manner and their interaction along with popular Size are expressed together as Trophic Level.

(ii) 1. Food Chain - Food Chain are dynamic in nature which link the biotic & abiotic components of an ecosystem. One Organism eats other and then is eaten by another. A sequence of Organism which feed on one another & Transfer energy from a food Chain.

Trophic levels in a food Chain,

- Producers: They are food producing organisms who produce food for all Organisms in ecosystem.
- Consumers: They depend on food for Others.

3 types of Consumers

(a) Primary Consumers: Animals which eats the plant directly are called primary Consumers

(b) Secondary Consumers: They are both carnivores and omnivores.

Example - Insects, Birds, etc

(c) Tertiary Consumer : Animals ~~that~~ that eats carnivores.

Example - Pig, Human, etc.

Decomposers; These Organisms break down dead organic material and waste products to simpler compounds & thereby help in the decomposition of decaying matter.

2. Food Web - Food web is a network of food chains where different types of organisms are connected at different trophic levels so that there are a number of options of ~~ed~~ eating & being eaten at each trophic level.

3. Energy Flows - Energy is the primary force responsible for all authorities in an ecosystem. The flow of energy from producers to top Consumers is called energy flow which is undirectional.

The green plants capture the solar energy & convert it through the process of photosynthesis into chemical energy of food and store it into their body. The process is called PRIMARY PRODUCTIVITY.

The energy is lost from ecosystem when organic matter is oxidized back to CO_2 by the respiration of autotrophs & heterotrophs. At the trophic level of heterotrophs, the rate of assimilation of energy is called SECONDARY PRODUCTIVITY.

The Diagram is as follows;

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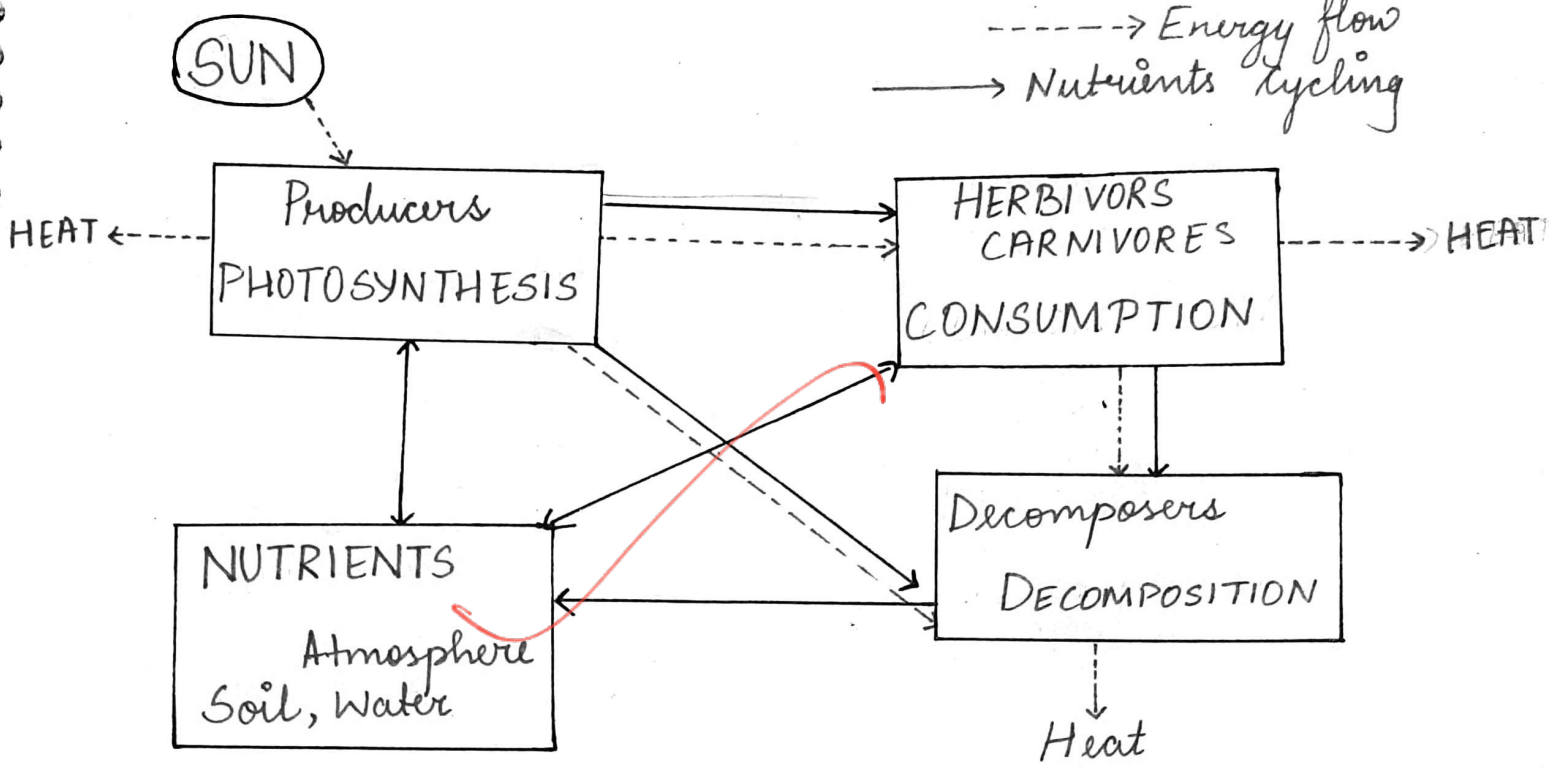

4. Biogeochemical Cycling - Nutrients move through cycles.

A chemical element moves through the biotic & abiotic components of an ecosystem, of which 30 to 40 elements are necessary to life, six rank as the most important; CARBON, HYDROGEN, OXYGEN, NITROGEN, SULPHUR & PHOSPHORUS.

These nutrients move from non-living to living & back to the non-living again in a cyclic manner.

The Biogeochemical cycles are driven by energy flow & are crucial for the maintaince maintenance of life on Earth in its present form.

The Biogeochemical cycles are of two basic types;

→ Gaseous &

→ Sedimentory Type

In the gaseous cycle (such as nitrogen and carbon) the reservoir is in the atmosphere or hydrosphere. In Sedimentary types (such as phosphorus cycle), the reservoir is in the lithosphere.

The Nutrients are first taken up by the autotrophs, bound in the organic matter & move along the food Chain to heterotrophic level and Ultimately from all trophic levels, with the detritus, to the decomposer food Chain. The Decomposers break down the Complex Organic compounds & Release the nutrients to the Soil from where they are again taken up by the plants.

These biogeochemical cycles provide the foundation to understand how human activities lead to nutrient enrichment and global climatic change.

Q3. Name any five Native plant Species & discuss their ecological importance.

The five Native plant Species with their ecological importance is as follows;

(1) Dalbergia sissoo → biological Name

- Locally known as shisham / sisam / sissai / tali / sissoo / Shewa
- A medium to large-sized deciduous tree with large, wide spreading crown. Bark thin, grey, longitudinally furrowed, exfoliating in narrow string. The leaves are

imparipenate ; leaflets 3-5, alternate, broad ovate.

- Flowers are inconspicuous, pale white to dull yellow present in short clusters. Pods are thin, narrowed at the base, flat with 1-4 seeds. Seeds are kidney shaped, thin & flat, light Brown.
- Flowering in Mid March. Fruit forms soon after the flowering, persist till the following February.
- Wood Rasping & dark bark is used medicinally for curing leprosy, boils, dysentery & skin diseases.

(2) **Pithecellobium dulce** → Biological Name.

- Locally known as jungle jalebi / dakhani babool / vilaiti imli.
- A spiny large deciduous tree with a broad, spreading crown, commonly clipped down to form a dense, beautiful hedge.
- Leaves are twice feathered, with only one pair of side-stalks each with one pair of curving blunt leaflets. Flowers in round woodly clusters with long dirty white stamens. Fruit is slighty flattened pod, becoming tightly coiled as it matures.
- In folk Medicine, a decoction of its bark can cure frequent bowel Movement. The leaves can be applied as plasters for pain & veneral sores. Decoctions of leaves are also used for indigestion & Abortifacient.

(3) **Phyllanthus emblica** → Biological Name

- Locally known as amla / aonla / aunra / amlaki.
- A distinctive medium-sized deciduous tree with a fluted trunk, fine, feathery foliage and thin grey bark peeling in small, irregular

patches. The leaves are tiny, narrow close-set & tiny pointed at apex.

- Flowering starts, flowers are also small with 6 pink or greenish petals like segments, in clusters on naked twigs below the leaves, male & female flowers are seperate.
- Flowers are then developed in fruit is nearly round, smooth, yellow-green with thin, translucent skin.
- Flowering from late March to mid April. Medicinally used as a source of 'Vitamin C'.

(4) Ailanthus Excelsa → Biological Name

- Locally known as mahanukh/ mahaneem/pirneem /ulloo / arua.
- A large deciduous tree with a neat, dome-shaped crown. The main branches typically emerge at right angles to the massive trunk before sweeping upwords.
- Bark is grey, corky, thick and with intense vertical fissures. Leaves are very large, feather-compound with 8-14 pairs of toothed leaflets.
- Flowers are small, greenish yellow & in large cluster male & female flowers on seperate tree.
- Leaves and Bitter bark of this is used to cure fever, bronchitis and dyspepsia in the from of tonic.

(5) Syzigium Cumini → Biological Name.

- Locally known as jamun / jaman / paiman / phalinda
- A beautiful large canopied tree, more or less evergreen. Bark is pale brown, flaky & Rough especially on lower trunk.
- Leaves are long, smooth & leathery ~~in~~ with numerous secondary veins running parallel & United with Marginal vein.
- Flowers in dense Clusters with small petals & are whitish to creamish in colour. Fruit is a round or oblong berry, deep purple when ripe with sweet or tart flesh.
- The canopy looks loveliest in late March - April. Flowering is in May & fruit ripen by late June & July.
- The fruit is used in folk medicines for diabetes, dysentery & diseases of spleen.

Q4. What is eutrophication?

"EUTROPHICATION is an enrichment of water by nutrients salts that cause structural changes to the ecosy ecosystem such as: increased production of algae and aquatic plants, depletion of fish species, general deterioration of water quality and other effects that reduce and pre-clude use".

Eutrophication is a serious environmental problem since it results in deterioration of water quality and is one of the most impediments to achieving the quality Obj--ectives established by the Water Framework Directive (200/60/EC) at the European level.

According to th survey of the State of the World's Lakes, a project promoted by the international Lake environment Committee, eutrophication affects 45% of asian lakes, 53% of those in Europe, 48% of those in North America, 41% of those in South America and 28% of those in Africa.

All water bodies are subject to a natural and slow eutrophication process, which in recent decades has undergone a very rapid progression due to the presence of man & his activities (so called cultural Eutrophication).

- The Cultural Process of eutrophication consists of a continuous increase in the contribution of nutrients, mainly nitrogen & phosphorus (Organic level) Until it exceeds the capacity of the water Body (i.e.) capacity of a lake, river or sea to purify itself), triggering structural changes in the Waters.