

## BT 401 Current Final term Spring 2021

### Q1. Central Goal behind any zoo? 2 Marks

Conservation (not exploitation) should always be the central goal behind any legitimate zoo.

### Q2. How many interplaying in tree population? 2 Marks

Tree populations rely on three interplaying mechanisms to respond to environmental change:

- ☐ adaptation
- ☐ Migration
- ☐ phenotypic plasticity

### Q3. Role of Biodiversity in habitat species management area? 3 Marks

Category IV areas are important for their role in 'plugging the gaps' in conservation strategies by protecting key species or habitats in ecosystems. It provides a management approach for areas that have already undergone substantial modification, necessitating protection of remaining fragments for identified target species with or without intervention.

### Q4. Background history of CBD. 3 Marks

- ☐ CBD is about the conservation and wise use of different biological resources (plants and animals).
- ☐ It was adopted in 1992 at Rio De Janeiro, Brazil and entered force on January, 1993, which was 90 days after the 30th ratification.

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# VU Medical Zone

- ☐ Pakistan signed it in June 1992 at United Nations Conference on Environment and Development held at Rio De Janeiro, Brazil
- ☐ Pakistan ratified it on 26th July 1994.

## Q5. Silent features of Pakistan Fisheries Ordinance? 5 Marks

- ☐ It is an ordinance to amend and consolidate the law relating to fisheries in the West Pakistan.
- ☐ It says that no person will be allowed to use dynamite, pesticides or other explosives for catching the fish.
- ☐ Government can declare any water area as sanctuary.
- ☐ Then there will be no permit for fishing except some license.
- ☐ An Inspector of Fisheries may without a warrant arrest any person committing in his view any offence under section 6, 7, 8, 9 or 11.

## Q6. What is EEZ? 2 Marks

This law controls marine pollution and exploration, development, conservation and management of living resources in Pakistan's Exclusive Economic Zone (EEZ). This law means that a ship carrying nuclear and hazardous substances will have to inform the Government of Pakistan.

## Q7. What is PEPA? 2 Marks

PEPA provides for;

- Protection,
- Conservation,
- Rehabilitation and
- Improvement of the environment;

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PEPA provide framework for prevention and control of pollution. Helps in protection of sustainable development.

## **Q8. What is Socio culture values in monuments?**

**3 Marks**

Evidence of traditional land use patterns is a key criterion for category V areas, and therefore these areas will hold certain socio-cultural values, largely that of resource use by local people such as sustainable forestry and agriculture. Human settlements are very likely to be present as a key characteristic of these areas is a long-history of interaction between people and their environment.

## **Q9. Tissue culture Preservation?**

**5 Marks**

Using this method, millions of genetically identical plants can be obtained from a single bud. This method has, therefore, become an alternative to vegetative propagation. Shoot tip propagation is exploited intensively in horticulture and the nurseries for rapid clonal propagation of many dicots, monocots and gymnosperms. Conservation in tissue culture in in vitro genebanks is often combined with cryopreservation. Cultures in the active genebank are maintained by successive subculturing allowing culture renewal and distribution. For medium term storage, sub-culture intervals are extended, reducing processing costs by arresting growth using cold treatments, adapted light conditions, culture medium modifications (osmotic active compounds, growth retardants). This increases efficient use of resources and staff time and offsets selection risks and contamination.

## **Q10. Cartagena Protocol covers?**

**3 Marks**

The Protocol covers: “transboundary movement, transit, handling and use of all living modified organisms that may have adverse effects on the conservation and sustainable use of biological diversity, taking into account risks to human health”.

## Q11. Zoological Park?

2 Marks

“A zoological park is a location where animals are kept in captivity for study and viewing.”

## Q12. Name lab of plant genetic resources?

5 Marks

Plant Genetic Resources Institute hosts the sole National Genebank of Pakistan for conservation of plant genetic resources and six labs including

1. germplasm exploration lab
2. seed preservation lab
3. in vitro conservation lab
4. germplasm evaluation lab
5. plant introduction and seed health lab
6. Data management lab

## Q13. What will be happen if invertebrate species become extinct from earth?

2 Marks

Because of the many ecosystem services that they provide, invertebrates have climate change a key role to play in adapting agriculture to the effects of climate change. The extent to which the individual services provided by invertebrates will be enhanced or impeded by climate change is difficult to predict. However, if invertebrate biodiversity is lost, the capacity of ecosystems to adapt is likely to diminish.

## Q14. Landscape-Seascape?

2 Marks

A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value.

## **Q15. The successful principle of quarantine? 3 Marks**

1. Sound scientific and technical principles should form the foundation of a quarantine program.
2. Pests and pathogens should be ranked by quarantine services according to the potential danger they pose to crops and the potential for success in excluding them. For example, germplasm from centers of diversity should receive a high priority because of the potential for such accessions to harbor coevolved pests or pathogens.
3. When germplasm must be planted and grown for the purposes of quarantine testing, it should be done in an area geographically and ecologically separated from the major growing areas for that crop, to prevent the establishment of crop specific pests or pathogens.
4. When germplasm is endangered or the need for particular accessions is particularly urgent, some discretion should be possible on the part of quarantine officials in allowing exceptions for controlled entry, despite existing regulations to the contrary.
5. Decentralized quarantine services are generally more efficient because they enfold a wider range of expertise in germplasm assessment.
6. Because delays in transit can be detrimental for any germplasm accessions, access to good communication and transportation services is essential for quarantine.

## **Q16. Germplasm Conservation. 5 Marks**

In 1972, conservation of habitats rich in genetic diversity was recommended in the UN conference. Then an International Board for Plant Genetic Resource (IBPGR) was established. This board has objectives to provide necessary support for collection, conservation and utilization of plant genetic resources from anywhere in the world.

(a) In situ Conservation: Since 1980, in situ conservation has received high priority in the world conservation strategy. The method of conservation is to preserve land races with wild relatives in which genetic diversity exists.

(b) Ex situ Conservation

It is the chief mode of conservation of genetic resources including both cultivated and wild ones. Under suitable conditions genetic resources are conserved for a long term as gene bank. Such gene bank is of two types:

(i) In vivo Gene Bank

(ii) In vitro Gene Bank

## Q17. Category V. 5 Marks

A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value. Developed by the International Union for Conservation of Nature (IUCN) with support of the World Commission on Protected Areas (WCPA) and other international institutions such as the Convention on Biological Diversity (CBD), and assigned by national governments.

- Where safeguarding the integrity of this interaction is vital to protect and sustain the area and its associated nature conservation and other values.

Primary objective

- To protect and sustain important landscapes/seascapes and the associated nature conservation.

Other objectives

- ☐ To maintain a balanced interaction of nature and culture.
- ☐ To contribute to broad-scale conservation by maintaining species associated with cultural landscapes and/or by providing conservation opportunities in heavily used landscapes;

- ☐ To provide opportunities for enjoyment, well-being and socio-economic activity through recreation and tourism;
- ☐ To provide natural products and environmental services;
- ☐ To provide a framework to underpin active involvement by the community in the management of valued landscapes or seascapes and the natural and cultural heritage that they contain;
- ☐ To encourage the conservation of agrobiodiversity and aquatic biodiversity;
- ☐ To act as models of sustainability so that lessons can be learnt for wider application.

## Role in the landscape/seascape

- ☐ Some category V protected areas act as a buffer around a core of one or more strictly protected areas
- ☐ Category V protected areas may also act as linking habitat between several other protected areas.
- ☐ Category V offers unique contributions to conservation of biological diversity. In particular:
  - ☐ Species or habitats that have evolved in association with cultural management systems and can only survive if those management systems are maintained
- ☐ To provide a framework when conservation objectives need to be met over a large

## Q18. Process of Sampling in DNA? 5 Marks

DNA preserved in DNA banks will be stored either within cells and extracted upon retrieval from storage or extracted from cells and purified before storage. The quality of the DNA is expressed through yield, purity, molecular weight, amplification efficiency and authenticity of sequences. The quality of DNA extracted from plant specimens is dependent on the condition of the specimen before storage, the storage environment and the duration of storage. Rapid drying of plant samples with silica gel or lyophilisation helps to preserve the DNA.

## Q19. Types of Plants in Botanical Garden? 3 Marks

- 1- cacti and succulent plants.
- 2- herb gardens.
- 3- greenhouses, shade houses.
- 4- tropical plants.
- 5-Medicinal Plants.
- 6- aromatic or textile plants
- 7- other exotic plants.

## Q20. What are the Strategies for conservation and utilization of AnGR? 3 Marks

Following strategies should be followed for effective conservation and utilization of AnGR:

1. Formulating the National Livestock and wild-life Breeding Policies.
2. Encouraging the Formation of Breed Associations.
3. Developing Professional Human Resources.
4. Strengthening Research and Development Institutions
5. Developing Infrastructure for marketing international co-operation and assistance is needed in capacity building to remodel available livestock farms/research stations to conserve and develop genetic resources.

## Q21. What is meant by Assisted migration? 2 Marks

Assisted migration involves human movement of tree seed and seedlings from current locations to sites modelled to experience analogous environmental conditions in the future.



## Q22. Game reserve. 2 Marks

“A game reserve is an area wherein controlled hunting and shooting is permitted on permit basis”. A game reserve (wildlife preserve) is a large area of land where wild animals live safely or are hunted in a controlled way for sport.

## Q23. Forest genetic resources? 3 Marks

Forest genetic resources or tree genetic resources are genetic material of shrub and tree species of actual or future value. Forest denotes a stand, population or landscape of trees, and typically other associated woody plants.

Forest genetic resources are essential for forest-dependent communities who rely for a substantial part of their livelihoods on timber and non-timber forest products (for example fruits, gums and resins) for food security, domestic use and income generation. These resources are also the basis for large-scale wood production in planted forests to satisfy the worldwide need for timber and paper.

## Q24. Strict Nature Reserve? 3 Marks

Protected areas that are strictly set aside to protect biodiversity where human visitation, use and impacts are strictly controlled to ensure protection of the conservation values.

Role in the landscape/seascape

- Protecting some of the earth's richness that will not survive outside.
- Protecting additional ecosystem services.
- Providing areas where ecosystems can be studied in as pristine an environment as possible.

## Q25. Cold storage? 5 Marks

Germplasm of some plants (in the form of shoot tips, nodal or meristem explant culture) are stored at low and non-freezing temperature (1-9°C). At low temperature, growth of plant material is slow down but not completely stopped as in cryo-preservation. In cold storage there is no risk of cold injuries. For conservation of cultured plant materials low-pressure storage (LPS) and low oxygen storage (LOS) have been developed. These are alternative methods of cryopreservation and cold storage.

## Q26. Ramsar convention?

5 Marks

Ramsar is one of the global inter-governmental environmental agreements. The treaty was negotiated in 1960s by countries and NGOs. To avoid the increasing loss and degradation of wetland habitat for migratory water birds. In a 18 nations meeting it was adopted in the Iranian city of Ramsar On 2<sup>nd</sup> February 1971. Came into force in 21<sup>st</sup> December 1975.

### Mission

The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world".

The Convention uses a broad definition of wetlands which includes

- All lakes and rivers
- Underground Aquifers
- Swamps and Marshes
- Wet Grasslands
- Peatlands
- Oases
- Estuaries
- Deltas

- Tidal flats
- Mangroves etc.

## Q27. Types of variation? 3 Marks

Genetic refers to variation of genetic (DNA) origin, and variation of genes at different levels:

- ☐ (1) variation between species,
- ☐ (2) variation between populations within species
- ☐ (3) variation between individual trees within populations. The largest variation is between species, and loss of whole species is therefore also the most dramatic loss of future options.

## Q28. Link between FGR and climate change? 5 Marks

Climate change may also result in high variability in temperature and precipitation, with an increase in incidence of extreme events, such as flooding, late frosts and intensive summer droughts, amongst other events. In some areas, such as the Mediterranean and the Neo-tropics, an increase in seasonality is also expected. Under such conditions, natural selection may not result in efficient adaptation because selection pressures are multi-directional, involving traits that may be inversely correlated at the gene level. The standing genetic variation in populations may then not be large enough to create the rare new genotypic combinations that are required. Ecosystems affected by abrupt change may sustain rapid and widespread transformation as ecological tipping points are exceeded. Given the pivotal role of trees in ecosystem function, abrupt climate change impacts on them may thus have profound consequences for forests as a whole. Irreversible loss of ecosystem integrity and function may follow, with replacement by new non-endemic ecosystems.