



**THE OPEN UNIVERSITY OF SRI LANKA**

**M.Sc. In Environmental Sciences Level 08 (2016)**

**NEP 2202 /2214 Biodiversity Conservation and Management**

**Final examination 2016**

**Date: 22nd October 2016**

**Time.13.30hrs -16.30 hrs**

**Answer any four (04) questions**

**Question 1**

“The role of the Kew Gardens in London is said to extend well beyond its 300 acres. Here people are working to rescue extremely rare plants from total extinction. An example is the rescue of the Rwandan Water Lily - the smallest and rarest of the water lilies. Its only known native habitat (a hot spring) was totally destroyed. One plant was brought to Kew. After much effort by the Kew Gardens staff, they have managed to breed more plants. The last remaining plants of this species is now only found at Kew Gardens, UK”

The above passage is from a video programme that you watched on TV with your niece. Taking the Rwandan Water Lily as an example, explain to her advantages and disadvantages of in-situ and ex-situ conservation. Compare the effectiveness of these approaches for conservation of the Rwandan Mountain Gorillas of Rwanda. Suggest the conservation approach most suited for this endangered primate giving valid reasons for your choice.

**Question 2**

“Fuelled by the post war tourism boom, visitor numbers to Yala has been growing rapidly. In 2011, Yala had close upon 99,000 foreign visitors and 217,000 local visitors. The total visitation is said to have exceeded 500,000 in 2012. It is also estimated that there are over 250 jeep drivers operating in the Yala area, most of whom have no experience nor interest in wildlife, but have gone into the business to make money. Profit margins are high, with a single safari driver earning Rs. 4,000-Rs. 5,000 per safari, of approximately three hours, together with ‘handsome tips’ for a unique sighting, particularly leopards”

- a) Write an essay about the kind of tourism reported in the paragraph above. Explain whether this can be categorized as nature tourism, adventure tourism, sustainable tourism or ecotourism? Explain the differences in these tourism approaches, using visitation patterns at Yala in the above paragraph.
- b) Indicate the common misconceptions associated with the term Ecotourism
- c) What are the key differences between ecotourism and other forms of nature tourism?.

### Question 3

Which of the four systems recognised in the 1999 Biodiversity Conservation Action Plan (BCAP) of Sri Lanka would contain the Sinharaja World Heritage Site and Biosphere Reserve?

- a) To what biome does this forest belong ? Using the features characteristic of this biome, explain why the Sinharaja Forest is important as a Biosphere Reserve in Sri Lanka?
- b) What main **feature** of the Sinharaja Forest contributed most to its declaration as a World Heritage Site?
- c) To what IUCN Protected Area category do Biosphere Reserves and World Heritage Sites belong, and what International Organisation is responsible for declaring and monitoring these reserves?
- d) Explain briefly the main difference between a World Heritage site and a Biosphere reserve?
- e) What is the main law in Sri Lanka that governs conservation of the Sinharaja Forest and which organisation is directly responsible for implementing it?

### Question 4

*Chemical weapons with potential for bioprospecting in the biological gold rush . . . Even though bio-prospecting marine resources for medicinal use is considered time-consuming and economically risky, many are used in technology and industry . . . "so far, relatively few marine plants, animals and microbes are responsible for an impressive yield of more than 12,000 new chemicals. . . . Most bioprospecting experiments have been carried out in the tropical seas. Coral reef ecosystems are first choice targets because they are characterized by high biodiversity and intense competition for space, leading to a chemical warfare among sessile organisms . . . Soft bodied sessile invertebrates in particular, such as sponges, soft corals, sea-fans and sea-squirts, are renowned for their refined chemical arsenals of bioactive compounds because they lack the means for mechanical defence. They are among the least studied marine organisms, with new species discovered almost daily."*

*Source: Meliane, I. (2004). A Biological gold rush. World Conservation, Volume 35, No. 1. p 20.35*

1. Answer the following questions after reading this paragraph:

- (a). Which is the most relevant article of the CBD in relation to obtaining fair and equitable benefits from bioprospecting in coral reef ecosystems for new chemicals for medicinal use by a developed country party in the territory of a developing country party?

(b). What are the 2 conditions are imposed in the CBD on the developed country to assist the country of origin to benefit from such bioprospecting?

(c) Which Article (or sub-article) of the CBD relates most to use of traditional knowledge associated with the use of biological resource?

(d) To what kingdom, and phyla do the sponges, soft corals, sea fans and sea squirts listed in the above paragraph belong to.

(e) Explain why coral reef ecosystems are found mainly in shallow tropical waters and not in the deep oceans.

### Question 5

“Just a couple of shavings of black truffles known as black diamonds can cost hundreds of dollars in a restaurant in Paris. White truffles from Italy can cost three times as much. Truffles are a delicacy and the most expensive food in the world. In Italy and France truffles are in high demand for this resource which is becoming increasingly scarce.”

- a) Which level of biodiversity (i.e. genes, species, ecosystems) do truffles belong to?
- b) Describe the resource that is exemplified in the above paragraph, and where it is positioned in the six kingdoms of life.
- c) Why are truffles termed as a resources? What type of resource use is exemplified here?
- d) What type of resource use and biodiversity value can be best assigned to truffles? Explain your choice in terms the different biodiversity values, such as direct or indirect use values, optional use, existence value, bequest value, ethical value and aesthetic value.
- e) From the description given above, are truffles used for subsistence or commercial purposes? Explain your answer.
- f) Would Article 15 and 19 apply to the use of truffles in the food industry? Explain your answer briefly.

### Question 6.

Write short notes on any **three (03)** of the following.

- a) Environmental Education and Interpretation.
- b) Ecosystem services.
- c) Factors contributing to the Degradation of biodiversity of Sri Lanka.
- d) Use /no use value of biodiversity.
- e) Different approaches/options to conserve biodiversity