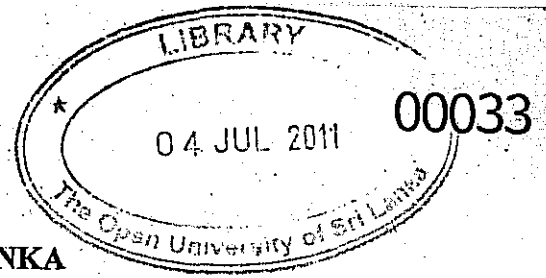




THE OPEN UNIVERSITY OF SRI LANKA
POST GRADUATE DIPLOMA / MASTER OF SCIENCE IN
ENVIRONMENTAL SCIENCE 2010-2011
ENVIRONMENTAL STUDIES UNIT
NEP 2202 BIODIVERSITY CONSERVATION AND
MANAGEMENT
FINAL EXAM



Date: 21st February 2011

Time 13.30 p.m to 16.30 p.m (3 hours)

Answer Three (4) Questions only

Question 1

“ Forests are being destroyed, with major impacts on the earth’s biodiversity as well for the world’s climate, already warming at an alarming rate. The demand for timber and fibre continues to grow and is being met by increased reliance on plantation forestry. Many of the plantations that are being grown around the globe are non-native species that have characteristic rapid growth and good commercial qualities. In some cases the high rates of production are a result of the absence of native herbivores. At the same time there is concern about the threat of non-native plantation species and the impact of changing climates on forest productivity.”

- (1) Define extractive and non-extractive uses of biodiversity, using examples of forest biodiversity from the above paragraph.
- (2) What are the two main threats to global forest biodiversity that are suggested in the paragraph above?
- (3) What type of biome from among the following would be affected mostly by the growing demand for timber: (a) Tropical rainforests (2) Boreal forests (3) Savannah (4) Tundra. Explain your choice in one sentence.
- (4) Give reasons for concern about the threat from non-native plantation species. Explain briefly.

(5) Define and briefly discuss the difference between direct and indirect values of biodiversity using examples from forests gained from the above paragraph.

Question 2

You have been given an article on bioactive compounds from Marine Molluscs by a friend. This leaflet states that "*Marine Molluscs show high potential for a range of biological applications. For example, they possess analgesic drugs more effective than morphine and some very effective anti cancer agents. A large number of bioactive compounds are produced from these organisms and have led to large-scale biosynthesis for medicinal purposes.*"

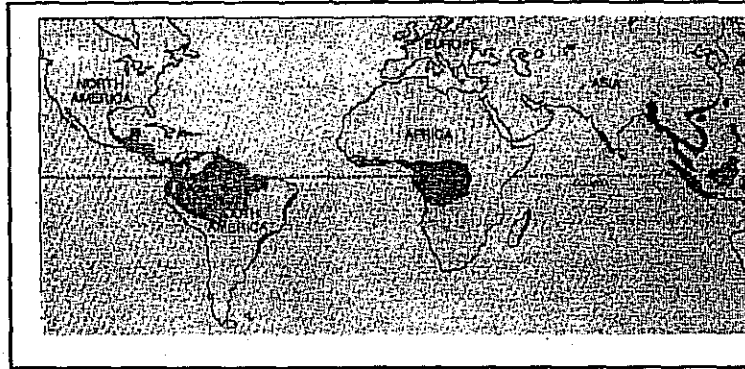
- (1) Your friend wants to know what is meant by a marine mollusc. Explain to what Kingdom and Phylum it belongs, and where it is found naturally.
- (2) To which of the following 'Classes' could a marine mollusc belong ?
(a) Branchiura (b) Bivalvia (c) Cephalopoda (d) Crinoidea
- (3) Which type of 'resource use' of marine molluscs are given as examples in the paragraph above? (answer in one sentence)
- (4) Select the main biodiversity value/s of the marine molluscs mentioned in the paragraph above from the following and explain your choice:
(a) Direct Extractive use value (b) Indirect use value (c) Optional use value
(d) Aesthetic value. (e) Bequest value
- (5) (a) State the industry in Sri Lanka that uses cephalopods, (b) give two examples of Cephalopods that are commonly used in this industry and (c) What type of resources does this industry provide?

Question 3

1. Analyse in point form the advantages and disadvantages of *in-situ* and *ex-situ* conservation with regard to the leopard in Sri Lanka. Provide relevant definitions.
2. Compare the suitability of *ex-situ* conservation measures for an endemic ornamental fish species that is exported, a large rainforest primate and a rare plant species.
3. How relevant are species and ecosystem based approaches for conservation of the endemic critically threatened western purple-faced langur of Sri Lanka? Explain in point form what approach/es should be used and why?
4. What is meant by a threatened species in the IUCN Red List? What are the three categories of threatened species in the current IUCN Red List?

Question 4

1. What is the biome you see in the map below ?



2. Briefly describe the main structural features that is characteristic of the biome you see in the map above
3. (a) If you are asked to compare a tropical forest and a boreal forest, which one could be expected to have a higher species diversity within a one hectare of forest?
- (b) Of the two biomes mentioned above, where would you expect to find the greater diversity of amphibians ? Explain your answer in relation to the two biomes mentioned above.
4. What are the two main laws in Sri Lanka that govern conservation of forests, protected areas and the species they harbour (including Protected species), and what two organisation/s are directly responsible for implementing each of these laws?

Question 5

A newspaper article mentions that "*The Forest Department records and aerial photographs indicate a total area of over 10,000 ha of well stocked plantations, which include Pinus caribaea and jak*"

(1) Classify these two species according to Kingdom and plant Division.

Pinus: Jak

(2a) Which of these two species is naturally found in a biome that harbours the grizzly bear and caribou ?

(2b) Name and very briefly describe the biome that contains *Pinus* giving its worldwide location

(2c) Which of the following animal/s is/are never found in the biome that harbours *Pinus*? **Caribou, elk, deer, gorilla, grizzly bear, wolverine, wolves, beaver, chipmunks and squirrels**

3. What **main threat** to Sri Lanka's wet zone forest ecosystems is stated in the National Biodiversity Conservation Action Plan, and what is the historical reason for this?

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Question 6

1. What are the four systems that are recognised to present a framework for conservation action in the 1999 Biodiversity Conservation Action Plan (BCAP) of Sri Lanka? Under which system is the conservation and use of marine organisms addressed?
2. What is the main institution concerned with implementing the BCAP and the Convention on Biological Diversity in Sri Lanka?
3. State in point form the measures/facilities that are present for *ex-situ* conservation of commercially important components of crop species and their wild relatives in Sri Lanka.
4. What actions/recommendations for conservation of agro-biodiversity in Sri Lanka are listed in the BCAP of 1999?