

**The Open University of Sri Lanka**  
M.Sc. in Environmental Science - Level 07 (2015/16)  
**NEP1211 – Understanding the Environment**



**No BOOK TEST -1 (NBT)**

Date : 3<sup>rd</sup> September 2016

Time Allowed: **One Hour (1.00 pm – 2.00 pm)**

Registration No.

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**ANSWER THE ALL QUESTIONS IN THE QUESTION PAPER**

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**Part A –Multiple Choice Questions**

*For each question there are four suggested answers labelled (a), (b), (c), (d). Underline the correct answer.*

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**(2 marks each)**

1.

1.1 Stratification is more common in

- (a) deciduous forest.
- (b) tropical rain forest.
- (c ) temperate forest.
- (d) tropical savannah.

1.2 Energy flow in ecosystem is ,

- (a) bidirectional.
- (b) multidirectional.
- (c ) unidirectional.
- (d) all round.

1.3 Organic compounds first evolved in earth required for origin of life were

- (a) proteins and amino acids.
- (b) protcins and nucleic acids.
- (c ) urea and amino acids.
- (d) urea and nucleic acids.

1.4 Which of the following ecosystem has highest rate of gross primary productivity?

- (a) Grasslands
- (b) Mangroves

- (c ) Coral reefs
- (d) Equatorial rain forest

1.5 Which of the following features are found among mangroves?

- (a) Salt glands on the leaves
- (b) Pneumatophores
- (c ) Prop roots
- (d) All of the above

1.6 The global distribution of biomes is determined by

- (a) biodiversity and geology.
- (b) temperature and rain fall.
- (c) rainfall and sunshine.
- (d) biodiversity and temperature.

1.7 Which of the following biome is often transitional between tropical rain forests and hot deserts

- (a) Deciduous
- (b) Savannah
- (c) Taiga
- (d) Chaparral

1.8 Which of following statement is true for tundra biomes

- (a) Plants and animals are adapted to lack of water due to heat.
- (b) Plants and animals are adapted to lack of water due to freezing temperature
- (c) Rainfall amount may not be enough to support many trees
- (d) Rainfall happens almost everyday

1.9 Pyramid of numbers in a pond ecosystem is,

- (a) irregular.
- (b) inverted.
- (c) Upright.
- (d) spindle shape.



1.10 Which of the following animals shows the highest levels of D.D.T depositions in its body

- (a) Tuna spp.
- (b) Phytoplankton
- (c) Eel
- (d) crab

1.11 If there was no CO<sub>2</sub> in the earth's atmosphere the temperature of earth's surface would be

- (a) higher than the present.
- (b) dependent on the amount of Oxygen in the atmosphere.
- (c) same as present.
- (d) less than the present.

1.12 Which of the following statement is incorrect ?

- (a) Average rain fall in temperate deciduous forest is 750-1500mm.
- (b) Temperature of coniferous alpine and boreal forests is up to 10 degrees.
- (c) Northern coniferous forests are called taiga.
- (d) Coniferous forests located at high latitude are alpine.

1.13 With reference to detritus food chain the following statements are given,

- 1. Decomposers are also known as saprophytes.
- 2. Dead plant remains such as leaves, bark, flowers and dead remains of animals, including fecal constitute detritus.
- 3. Detritivores breakdown detritus into smaller particles . This process is called fragmentation.

Select the correct answer

- (a) 1 and 2 only.
- (b) 2 only.
- (c) 1 , 2 and 3.
- (d) 2 and 3.



1.14 Nitrogen gas returns to the atmosphere by the action of

- (a) nitrogen fixing bacteria
- (b) denitrifying bacteria.
- (c) nitrifying bacteria.
- (d) nitrate fertilizers.

1.15 Biogeochemical cycles,

- (a) only include processes conducted by or within living organisms
- (b) pertain only to the abiotic environment
- (c) describe the movement of water and other materials throughout the abiotic and biotic environment.
- (d) only pertain to exchanges and interactions that occur within the atmosphere.

1.16 Which of the following is not a physical factor in a coastal ecosystem

- (a) Temperature
- (b) Wave action
- (c) Water currents
- (d) Type of substrate

1.17 Factors that limit the productivity of estuary ecosystems include,

- (a) a lack of sea water.
- (b) the need to survive osmotic stress.
- (c) the depletion of the oxygen in the sediments.
- (d) both (b) and (c).

1.18 Select the correct inter-relationship.

- (a) Commensalism -None of interacting populations affect each other
- (b) Symbiosis - The interaction is useful to both the populations
- (c) Symbiosis -Neither population affects each other.
- (d) Commensalism- The interaction is useful to both the population.

1.19 Transition zone between two vegetation types or vegetation region is known as,

- (a) Ecoline
- (b) Ecotone



- (c) Ecosystem
- (d) Ecotope

1.20 Viviparous germination of seed occurs,

- (a) within the fruit immediately after the detachment from the mother plant.
- (b) while it is still attached as the mother plant.
- (c) after the seed is released from the fruit.
- (d) when it falls down on a proper substrate.



## Part -B- Structured Questions

Answer all Questions

2.

2-A ) Answer the following questions (quest. No 2.1- 2.3) ,using following paragraph.

A freshwater lake with the crustacean called *Daphnia* that feed on phytoplankton is situated adjacent to a farm and a chemical factory. Nutrients from a farm occasionally run into the lake. The phytoplankton use these nutrients and sunlight for their reproduction. Mosquito fish is the only predator of *Daphnia* in this lake.

2.1 Name **three abiotic factors (03)** and **three biotic factors (03)** that comprise this ecosystem

Abiotic factors -----  
-----{3 marks)

Biotic factors -----  
----- (3 marks)

2.2 Draw a suitable food chain for that aquatic habitat.

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(1 mark)

2.3 Chemical effluents from the chemical factory causes the death of mosquito fish in this lake. If these chemicals do not harm on *Daphnia* and phytoplankton populations what would you expect for above ecosystem.

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(3 marks)



2-B)

Give **one (01)** respiratory adaptation for following aquatic animals

Aquatic animals	Respiratory adaptation
Stick Insect	
Mosquito larva	
Damsel fly nymph	
May fly nymph	
Rat tailed maggot	

(10 marks)

3.

3.1 What term refers to the area of the shore between mean high tide water level and mean low tide water level ?

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(2marks)

3.2 Give **three factors (03)** that affect to the zonation of above mentioned area.

1.-----

2.-----

3.-----

(6 marks)

3.3 Name **four (04)** adaptations seen in living organisms in the above mentioned (3.1) area and give one example for each.

Adaptations	Living organisms (eg)
1.	
2.	
3.	
4.	

(12 marks)



4. Nitrogen is crucial for sustaining life in both terrestrial and aquatic ecosystems.

4.1 Briefly describe the following steps in the Nitrogen cycle

a. Nitrogen fixation

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b. Ammonification

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c. Nitrification

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d. Denitrification

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(8 marks)

4.2 Give one reason why Nitrogen is crucial for sustaining life on earth.

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(3 marks)

4.3 Briefly describe how Nitrogen cycle can be disrupted by human activities.

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(9 marks)

