

The Open University of Sri Lanka

M.Sc in Environmental Science programme - 2018/2019

ZYP9505- Understanding the Environment – Level 9

No Book Test -2

Duration – One and half hours



Registration No.

Date- 2019.12.28

Time – 9.30 am- 11.00 am

Answer all questions

- Answer for the multiple choice questions in **part I** should be provided by placing X in the relevant cage indicating the most correct answer in the MCQ box provided.
 - Answers for the structured essay questions in **part II** should be written in the space provided in the question paper.
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Registration No. -----

MCQ BOX

Ques. No.	a	b	c	d
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Part I

1. Which of the following biome has a long dry season?
 - (a) Tundra
 - (b) Cool temperate forest
 - (c) Tropical rain forest
 - (d) Savana

2. Which of the following is often transitional area between tropical rain forests and hot deserts?
 - (a) Taiga
 - (b) Savana
 - (c) Deciduous
 - (d) Chaparral

3. Which of the following statement is **correct** about the energy pyramid ?
 - (a) It is always upright
 - (b) It is always inverted
 - (c) It doesn't exist
 - (d) It varies with the trophic level

4. Which of the following is a lotic ecosystem?
 - (a) Ocean
 - (b) Lake
 - (c) Pond
 - (d) River

5. Which one of the following is the succession in which development of the biotic community starts after the destruction of an existing community?
 - (a) Climax
 - (b) Seral
 - (c) Primary succession
 - (d) Secondary succession/

6. Tropical savanna,
 - (a) contains drought resistant grasses but no trees due to little water.
 - (b) has epiphytes.
 - (c) below freezing in the winter.
 - (d) poor soil because fallen leaves decompose quickly thus taking away much nutrients.
 - (e)

7. An inverted pyramid type of biomass is seen in ,
(a) forest ecosystem. (c) aquatic ecosystem
(b) grassland ecosystem. (d) desert
8. Human activities mainly influence the
(a) Carbon cycle (c) Nitrogen cycle
(b) Phosphorous cycle (d) Sulphur cycle
9. Increase in concentration of the toxic substances at successive trophic levels is known as
(a) Biofortification . (c) Biowar.
(b) Bioinformatics. (d) Biomagnification.
10. Ozone degradation is done by,
(a) DDT (b) CFC's (c) CH₄ (d) CO₂
11. Which of the following is incorrect about ozone depletion?
(a) CFC's releases 'Cl' atom causes degradation of O₃
(b) 'Cl' atoms act as catalyst.
(c) 'Cl' atom is not consumed in the reaction
(d) It is minimum over Antarctica region
12. Which one of the following is **incorrect**?
(a) Most of the forests have been lost in tropical areas.
(b) Ozone in upper part of atmosphere is harmful to animals
(c) Greenhouse effect is a natural phenomenon
(d) Eutrophication is a natural phenomenon in freshwater bodies
13. Desertification is a major problem many due to
(a) Overgrazing (c) Increased urbanization
(b) Over-cultivation (d) water logging
14. Air pollution is primarily results of,
(a) Deforestation (c) burning fossil fuel
(b) forestation (d) Eutrophication
15. Select the difference between nekton from benthos
(a) One lives only in rivers and the other lives only in lakes.
(b) One lives in freshwater and the other lives in salt water.
(c) One is a predator and the other is a primary producer
(d) One swims freely and the other is often attached to hard surfaces
16. Trophic level refers to the
(a) axis around the earth (c) stage in a food chain
(b) stage in an ecological niche (d) energy level in a food web

17. Which is the possible path of movement of nitrogen?
- (a) Soil --animals --plants --air-- soil
 - (b) Air---soil-plants-animals---soil---air
 - (c) soil---air---plants---air---animals---soil
 - (d) air---animals---soil---plants---air
18. Which of the following statement is **least** acceptable?
- (a) In the early stages of earth , the atmosphere had no oxygen.
 - (b) First organisms on earth , respired anaerobically
 - (c) All organisms on earth have evolved from a single stock of organisms
 - (d) Life can arise from nonliving matter due to natural causes at any time
19. When compared with tropical biomes, the temperate biomes
- (a) have a higher biological diversity.
 - (b) have a higher plant density.
 - (c) have trees that do not show annual growth rings.
 - (d) have more deciduous plants.
20. Primary productivity of the biosphere is highest in,
- (a) tropical rain forest.
 - (b) Oceans .
 - (c) grasslands.
 - (d) agricultural lands.
21. Which of the following is **correct** regarding the energy flow in the biosphere?
- (a) Energy is cycled in the biosphere.
 - (b) All autotrophic organisms in the biosphere do not use solar energy for carbohydrate synthesis

- (c) approximately 90% of solar energy that falls on the biosphere is converted into chemical energy, by plants
 - (d) Energy may flow both directions between two trophic levels
22. Which one of the following is **correct** regarding the hydrological cycle?
- (a) It occurs mainly due to interactions between biotic and abiotic components of an ecosystems
 - (b) Human activities significantly influence it
 - (c) Solar energy is essential to maintain it
 - (d) It is confined to a particular area
23. Which of the following cannot be attributed to global warming?
- (a) Tsunami
 - (b) Tropical storms
 - (c) spreading of malaria
 - (d) Inundation of coastal lowlands
24. Many rocky-shore animals cope with desiccation by
- (a). moving up the intertidal.
 - (b). crowding in areas that are always moist.
 - (c). opening their shells.
 - (d). expanding or elongating their soft bodies.
25. Which of the following is not a population attribute?
- (a) Majority of them live in a groups in a well-defined geographical location
 - (b) Share or compete for similar resources
 - (c) Potentially interbreed
 - (d) Single individuals of any species cannot live in isolation

Part II - Structured Essay questions

Answer all questions

1.

i. What is a biome ?

ii. Give two factors that effect on distribution of biomes in the world

iii. State two characteristic features of biomes.

1.-----

2.-----

iv. Name the biome which is having following characteristic features.

a. High biological diversity -----

b. Small broad leave plants with grasses -----

c. Presence of only grasses -----

d. Presence of conical or spire shaped trees -----

e. Restricted to higher latitudes

and no reptiles or amphibians -----

f. Presence of low rainfall and high -----

evaporation

2.

A.

i. Name the layers of atmosphere in correct sequence from surface of earth towards space

ii. Which one of the layers of atmosphere

- a. responsible green house effect ? -----
- b. protects earth organisms from harmful UV rays of Solar radiation? -----
- c. is responsible for weather condition ? -----
- d. contain air with lowest temperature ? -----

iii. What percentage of earth's surface is covered with oceans ?

B.

iv. State four main biotic components of an ecosystem.

- 1.-----
- 2.-----
- 3.-----
- 4.-----

v. State four main abiotic components of a terrestrial ecosystem.

- 1.-----
- 2.-----
- 3.-----

4.-----

vi. State two main functional features of an ecosystem.

1.-----

2.-----

vii. Snakes , grasshoppers, toads and eagles are the animals found in a grassland ecosystem. If the amount of energy fixed at the primary producer level of this ecosystem is approximately $800 \times 10^6 \text{ khr}^{-1} \text{ yr}^{-1}$.

a. Draw the food chain for above mentioned ecosystem.

b. What is the approximate amount of energy available at the trophic level to which snakes belong?

c. If eagles are removed from this ecosystem, indicate what can happen to the population size of grasshoppers.

3. Nitrogen is the most abundant element in atmosphere and circulates in various forms .

Following questions are based on the Nitrogen cycle.

i. What are the five processes of Nitrogen cycle ?

1.-----

2.-----

3.-----

4.-----

5.-----

ii. Name the animals which belong to following groups seen in the Nitrogen cycle.

- a. Free living aerobic bacteria -----
- b. Free living anaerobic bacteria -----
- c. Two cyanobacteria -----
- d. Two chemosynthetic autotrophic
bacteria -----
- e. Denitrifying bacteria -----

iii. Give the functions of chemosynthetic autotrophic bacteria

iv. What are the environmental conditions that need to activate the denitrifying bacteria in Nitrogen cycle?.

v. Give three human impacts that effect to the Nitrogen cycle in nature.

- 1.-----
- 2.-----
- 3.-----