



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR
YEAR 4 SEMESTER 11**

**SCHOOL OF NATURAL RESOURCES
BACHELOR OF SCIENCE ENVIRONMENTAL
STUDIES (BIOLOGY AND HEALTH)**

**COURSE CODE: EBH 4243
COURSE TITLE: ENVIRONMENTAL HEALTH
TECHNOLOGIES**

DATE: 19TH OCTOBER, 2020

TIME: 1430 - 1630HRS

INSTRUCTIONS TO CANDIDATES

- This paper consists of **THREE** sections A, B and C
- Answer **ALL** Multiple questions in Section A and All short Essay questions in Section B and **ANY two** Questions in **SECTION C**

Please turn over.

SECTION A (20): Answer ALL questions in this section

1. The main global contributing factors to greenhouse-gas emissions are
 - A. Electricity production and transportation
 - B. Industrial processes
 - C. Agricultural processes
 - D. Agriculture and transportation
2. Where is acid precipitation most commonly found?
 - A. Downwind of industrial emissions
 - B. Upwind of industrial emissions
 - C. Where industrial emissions are released
 - D. Where excessive fertilizer and pesticides are sprayed
3. Permit trading is used as a way to
 - A. Provide capitalistic incentives for companies to reduce emissions
 - B. Create a top-down approach to emission standards
 - C. Enable different countries to trade
 - D. Enforce socialism
4. Persistent organic pollutants (POPs) are dangerous because they
 - A. Remain in the environment, bio-accumulate in organisms, and bio-magnify throughout the food chain
 - B. Are considered carcinogens
 - C. Are corrosive and toxic
 - D. Persist in the environment and contribute to an increase in greenhouse gases
5. Chronic exposure to a substance means that an organism has been exposed to:
 - A. High levels over a long period of time
 - B. High levels over a short period of time
 - C. Low levels over a short period of time
 - D. Low levels over a long period of time

6. How can asbestos be harmful to humans?
- A. Asbestos binds to hemoglobin and blocks oxygen from binding, preventing oxygen from circulating in the blood.
 - B. Asbestos acts as an endocrine disruptor.
 - C. Asbestos lodges in the lining of the lungs, provoking the production of acid to destroy the invader, but over time it can potentially lead to cancer.
 - D. In its gaseous form, asbestos can be inhaled and ultimately cause cancer.
 - E. Asbestos can be absorbed into the blood, potentially poisoning the body.
7. Anthropogenic sources of methane include
- A. Methane hydrates
 - B. Wetlands
 - C. Landfills
 - D. Termites
8. Which of the following is true of recombinant DNA technology?
- A. It is illegal under the Kyoto Protocol.
 - B. DNA from different species is combined.
 - C. There are few benefits seen from this technology.
 - D. It is only used for crops at this point in time.
9. IPAT is an equation that expresses the idea that environmental impact (I) is the product of three factors: population (P), affluence (A) and technology (T). The IPAT model describes:
- A. The human impact on the environment through the effects of population numbers, affluence, and technological innovations
 - B. The human influence on the environment through the effects of pollution, affluence, and technological innovations
 - C. The human impact on the environment through the effects of population numbers on aquatic and terrestrial biomes
 - D. The International Pollution and Atmospheric Team
 - E. The human influence on the environment through the effects of pollution, atmosphere, and technological innovations

10. The deterioration of soil by human actions can be considered a
- A. Negative feedback loop because, eventually, the system will stabilize and the soil will return to its previous state
 - B. Positive feedback loop because once soil becomes degraded, further consequences occur as a result
 - C. Negative feedback loop because once soil becomes degraded, further consequences occur as a result
 - D. Positive feedback loop because eventually the system will stabilize and the soil will return to its previous state
11. Which element is consumed during decomposition in an aquatic environment, potentially leading to hypoxic situation?
- A. Nitrogen
 - B. Calcium
 - C. Carbon
 - D. Oxygen
12. What is one way in which CO₂ emissions can be reduced?
- A. Sequester carbon in the lithosphere.
 - B. Reduce the number of livestock globally.
 - C. Reduce fertilizer use.
 - D. Use alternative, renewable sources of energy
13. The activated sludge process consists of returning a portion of the clarifier
- A. effluent water entering the reactor
 - B. influent water coming out of the reactor
 - C. influent water entering the reactor
 - D. effluent water coming out of the reactor
14. A non-directed physicochemical interaction between heavy metal ion and microbial surface is called
- A. Biontransformation
 - B. Bioconversion
 - C. Biosorption
 - D. Biomining

15. A good way of dealing with the solid waste problem is
- A. Landfilling
 - B. Recycling
 - C. Compositing
 - D. Incineration
16. What is the source of chlorofluorocarbons?
- A. Aerosol sprays foams
 - B. Exhaust fumes of motor vehicles
 - C. Incomplete burning of wood
 - D. Refrigerants
17. Process in which inorganic nutrients are enriched with water is called
- A. industrialization
 - B. pollution
 - C. eutrophication
 - D. contamination
18. Which of the following should be provided in the case where aeration is absent?
- A. Screening devices
 - B. Mechanical mixers
 - C. Grit removers
 - D. Sedimentation tank
19. Mercury enters the aquatic food web mainly through
- A. The processes of bio-accumulation and bio-magnification
 - B. Deposition from atmospheric sources
 - C. Decomposition of organisms
 - D. Ocean dumping
 - E. Fertilizer and pesticide runoff
20. Which of the following types of electricity generation produces the least amount of greenhouse-gas emissions from cradle to grave?
- A. Coal
 - B. Nuclear
 - C. Natural gas
 - D. Oil

SECTION B (40 MARKS): ANSWER ALL QUESTIONS

1. State any four benefits of Cleaner Production. (4 marks)
2. Describe factors affecting biomining. (4 marks)
3. State six major effects of Nitrogen oxides and Ammonia emissions (6 marks)
4. What are factors may limit the applicability and effectiveness of composting? (4 marks)
5. With aid of well-illustrated diagram describe the life cycle of a product. (6 marks)
6. Describe the secondary treatment of waste water. (6 marks)
7. What are the Consequences of Global warming (4 marks)
8. What is meant by biochemical oxygen demand (2 marks)
9. Describe remedies to acid rain (4 marks)

SECTION C (40MARKS): ANSWER ANY TWO QUESTIONS

1. In achieving the sustainable growth objectives, environmentally friendly technologies and energy efficiency is the key as they apply cutting edge knowledge and non-technological innovations to improve existing products, processes and business models. Discuss factors influencing the adoption and use of Environmentally Friendly Technologies (EFTs) in Kenya (20 marks)
2. As a public health officer working with Narok County, describe in situ physical/chemical technologies you can use in soil, sediment, bedrock and sludge treatment. (20 marks)
3. The prospect of chronic oil pollution along the Kenyan coastline and the port of Mombasa is underestimated. Discuss causes and effects of oil pollution in Kenya (20 marks)

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