



AMREF INTERNATIONAL TRAINING CENTRE

Qualification Code : 0521 0654 B
Qualification : Environmental Science Level 6
Unit Code : ENV/CU/SCI/CC/05/6/B
Unit of Competency : Basic Principles of Environment

WRITTEN ASSESSMENT

Time: 3 Hours

INSTRUCTIONS TO CANDIDATE

1. This paper has two sections A and B
2. You are provided with a separate answer booklet
3. Marks for each question are as indicated
4. Do not write on the question paper

This paper consists of three (3) printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated

SECTION A: 40 MARKS
ANSWER ALL QUESTIONS

1. Define the following terms
 - a) Food chain (2 Marks)
 - b) Ecology (2 Marks)
2. The environment is a complex system composed of various interconnected components. Outline FIVE components of environment (5 Marks)
3. Identify FOUR various anthropogenic activities that have led to environmental degradation (4 Marks)
4. Identify THREE biogeochemical cycles in the environment (3 Marks)
5. Highlight THREE types of environmental resources (2 Marks)
6. A rural farming community is transitioning from traditional farming practices to intensive, monoculture agriculture using chemical fertilizers and pesticides. Outline four health effects of the above shift (4Marks)
7. Highlight FIVE potential consequences of improper disposal of pharmaceutical waste? (5 Marks)
8. Outline THREE types of bins or containers that can be used for waste segregation (3 Marks)
9. Highlight THREE roles of sustainable agriculture in improving water and land resource efficiency (3Marks)
10. State THREE role of "Internet of Things" (IoT) in enhancing resource efficiency. (3 Marks)
11. Outline THREE ecological impacts of urbanization (3 Marks)

SECTION B: 60 MARKS

ANSWER THREE QUESTIONS

12. A rapidly growing city is experiencing a surge in its population. This has led to an increase in residential, commercial, and industrial activities. The city's waste management system is struggling to keep up, resulting in overflowing landfills, illegal dumping, and increased air pollution from burning waste.
- a. Identify FIVE primary sources of environmental waste in this scenario. (10 Marks)
 - b. Describe THREE potential environmental and public health impacts of the city's inadequate waste management (6 Marks)
 - c. Analyze TWO practical and sustainable solutions to improve waste management in this urban setting, considering the city's rapid growth (2 Marks)
13. A major city is experiencing severe air pollution, with frequent smog alerts and rising rates of respiratory illnesses. The primary sources of pollution are identified as vehicle emissions, industrial activity, and the burning of solid waste.
- a) Identify THREE key pollutants contributing to the urban smog and their potential health impacts (6 Marks)
 - b) Analyze three factors contributing to the high levels of air pollution in this city (6 Marks)
 - c) Propose THREE practical and implementable measures to reduce air pollution and improve air quality in the city. (6 Marks)
 - d) Discuss TWO role of government policies, technological solutions, and public awareness campaigns in addressing urban air pollution. (2 Marks)
14. Imagine you are a consultant hired by a coalition of African nations aiming to achieve sustainable development. These nations face challenges such as rapid urbanization,

growing populations, and increasing pressure on their natural resources. They recognize the urgent need to improve resource efficiency to ensure long-term economic prosperity and environmental sustainability. The coalition seeks practical, scalable, and culturally relevant solutions that can be implemented across diverse African contexts."

- a. Describe FIVE major causes of resource inefficiency (10 Marks)
 - b. Based on this scenario, discuss FIVE specific strategies for improving resource efficiency in Africa (10 Marks)
15. A rapidly developing industrial zone is located near a sensitive wetland ecosystem. Local environmental authorities have observed a number of concerning activities:
- Activity 1: A chemical manufacturing plant is discharging untreated wastewater directly into a nearby stream that feeds the wetland.
 - Activity 2: A construction company is illegally dumping large quantities of construction debris, including concrete and plastic, in a protected forest area adjacent to the industrial zone.
 - Activity 3: A transportation company is importing and selling vehicles that do not meet the national emission standards, leading to increased air pollution in the surrounding residential areas
- Based on the scenario above:
- a) Discuss THREE distinct environmental offenses that are being committed. (6 Marks)
 - b) Describe FIVE The potential penalties that could be imposed by the environmental authorities, considering a realistic African legal framework. (10 Marks)
 - c) Discuss TWO challenges that environmental authorities might face in enforcing these penalties and ensuring compliance. (4 Marks)