

**ENVIRONMENTAL SCIENCE**  
**(Two hours and a quarter)**

*(Do not write during the first fifteen minutes. This time is to be spent on reading the questions. After having read the questions, you will be given two hours to answer the questions).*

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*In this paper, there are two sections: A and B. Section A is compulsory. You are expected to attempt any five questions from sections B. The intended marks for questions or parts of questions, are given in the brackets [ ]. Read the directions to each questions carefully and write all your answers in the answer sheet provided separately.*

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**Section A (50 Marks)**

*Compulsory: Attempt All questions.*

**Question 1**

A. Each questions in this part is followed by four possible choices of answers. Choose the correct answer. [25]

- i). All of the following are Millennium Development Goals EXCEPT
    - A. Develop national parks
    - B. Combat HIV/AIDS, malaria and other diseases
    - C. Reduce child mortality
    - D. Improve maternal health
  
  - ii). One of the best way to conserve or enhance the efficiency of energy is
    - A. Use vehicles for short journey
    - B. Buy less energy consuming devices
    - C. Design houses that consumes more energy
    - D. Use appliances that consume more energy
  
  - iii). Recycling, composting, waste to energy and land filling are
    - A. Effects of land pollution
    - B. Cause of land pollution
    - C. Management of solid waste
    - D. Measures to control air pollution
  
  - iv). Physical elements of environment include
    - A. Water, soil and rock
    - B. Plants, animals and microorganisms
    - C. Economic, social and political
    - D. Conservation, preservation and protection
  
  - v). Which of the following is an example of mutualism?
    - A. Cattle and egrets
    - B. Tapeworm inside the body
    - C. Leopard and a cow
    - D. Flowers and pollinators
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- vi). Pine trees can survive in dry soil because
- Leaves are needle shaped
  - Stem grow tall
  - Bear cones
  - Leaves are green
- vii). Which of the following activities is an anthropogenic factor for natural resource degradation?
- Wind storms
  - Food habits
  - Landslide
  - Wild fires
- viii). A watershed is an area of
- Land drained by a river system
  - Continuous land form
  - Forest
  - Lake, ocean or sea
- ix). This disaster has spiraling high speed accompanied by heavy rainfall. Which of the following best describes the above statement
- Wild fires
  - Volcano
  - Avalanche
  - Cyclones
- x). Which of the following is not a measure of biodiversity?
- Economic diversity
  - Genetic diversity
  - Ecosystem diversity
  - Species diversity
- xi). Energy conservation means
- Using energy at the maximum rate
  - Converting energy
  - Not using energy when not required
  - Not using energy when required
- xii). Sustainable development involves
- Reducing consumption
  - Making strong buildings
  - Building more roads
  - Using resources at maximum rate

- xiii). Ocean is an example of
- A. Terrestrial ecosystem
  - B. Forest ecosystem
  - C. Aquatic ecosystem
  - D. Agricultural ecosystem
- xiv). Which one is not a symbiotic relationship?
- A. Mutualism
  - B. Parasitism
  - C. Commensalism
  - D. Omnivores
- xv). Which of the following is not a greenhouse gas?
- A. CO<sub>2</sub>
  - B. O<sub>2</sub>
  - C. N<sub>2</sub>O
  - D. O<sub>3</sub>
- xvi). Hydrological cycle is also called
- A. Water cycle
  - B. Food cycle
  - C. Energy flow
  - D. Atmosphere structure
- xvii). Everyone is in one way or the other dependent on natural resources. From the following choices, who is the most depended on natural resources?
- A. Farmer
  - B. Driver
  - C. Teacher
  - D. Painter
- xviii). “It deals with study of interaction amongst living organisms and their abiotic components”  
The above statement best describes the concept of
- A. Biomes
  - B. Environment
  - C. Biosphere
  - D. Ecosystem
- xix). All of the following contribute to natural resources degradation EXCEPT
- A. Urbanization
  - B. Deforestation
  - C. Pollution
  - D. Reforestation

- xx). In the process of eutrophication, which of the following is NOT true
- Death of ecosystem
  - Decomposition does not take place
  - Oxygen is depleted
  - Algae blooms
- xxi). Disaster such as drought, extreme temperature, wild fires are based of the origins of
- Geophysical
  - Hydro meteorological
  - Climatological
  - Biological
- xxii). When a snake spit, such adaptation is an example of
- Structural
  - Functional
  - Behavioral
  - All of the above
- xxiii). All of the following are some of the good indicators of good watershed EXCEPT
- Polluted drinking water
  - High forested coverage
  - Less land slide
  - Absence of mining activities
- xxiv). Which practice would most likely deplete a nonrenewable natural resource?
- Harvesting trees on a tree farm
  - Burning coal to generate electricity in a power plant
  - Restricting water usage during a period of water shortage
  - Building a dam and a power plant to use water to generate electricity
- xxv). Which of the following does not relate to ecological provision of natural resources?
- Bamboos in high altitude prevents soil erosion
  - Limestone are mined for cement factory
  - Earthworms fill the soil in farmland
  - Forest absorbs carbon dioxide
- B. *Fill in the blanks by writing suitable word(s).* [5]
- Minimum \_\_\_\_\_ percent of Bhutan's total land shall be maintained to conserve country's natural resources.
  - The role and position of an organism in a habitat is \_\_\_\_\_.
  - Enhanced \_\_\_\_\_ contributes to global warming.
  - \_\_\_\_\_ is the movement of living organisms from one place to another.
  - Person suffering from food poisoning from fish meal can be due to \_\_\_\_\_ in the food chain.

C. Match the items of Column A with the most appropriate items of Column B

[5]

Column A	Column B
(i) The role or the position of an organism in a habitat	a. Spiritual
(ii) Pesticides that are used to kill insects	b. Acid rain
(iii) Forest, lakes and mountains are sacred	c. DDT
(iv) It is a result of air pollution	d. Ecological niche
(v) The zone of earth where life thrives	e. Ecosystem
	f. Biosphere
	g. Disaster
	h. Biodiversity

D. Write TRUE or FALSE for the following statement.

[5]

- (i). Improperly managed sewage outlets and chemical fertilizers can lead to oxygen depletion in the water bodies.
- (ii). Ozone layer filters out harmful ultraviolet rays.
- (iii). A hazard becomes a disaster only when there is high vulnerability and high response capacity.
- (iv). Bhutan has the potential for tidal energy.
- (v). GNP is more important than GNH.

E. Answer the following questions:

[10]

- (i). List any TWO forms of pollution and their effects. [2]
- (ii). Mention the cause and effects of earthquake. Any TWO [2]
- (iii). Explain Darwin's two theories of evolution with an example. [2]
- (iv). Why is emission of vehicles the source of acid rain? [2]
- (v). Explain any TWO levels of biodiversity. [2]

### Section B (50 Marks)

Attempt any *five* Questions

#### Question 1

The following are the eight Millennium Development Goals:

- (i). Eradicate extreme poverty and hunger
- (ii). Achieve universal primary education
- (iii). Promote gender equality and empower women
- (iv). Reduce child mortality
- (v). Improve maternal health
- (vi). Combat HIV / AIDS, malaria and other diseases
- (vii). Ensure environmental sustainability
- (viii). Develop a global partnership for development

- (a) Explain the Bhutan's unique sustainable development principle of Gross National Happiness (GNH) in relation to the Global Millennium Development Goals. [6]
- (b) Explain the global perspectives of development. [4]

**Question 2**

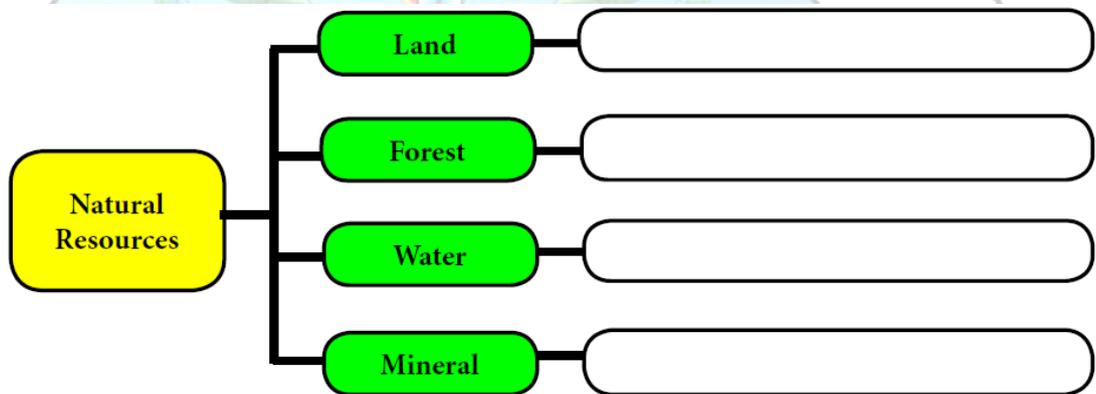
- (a) “ Air pollution is a transboundary issue.” Do you agree with the statement? Support your answer with one evidence. [2]
- (b) What are the sources of air pollution? Mention at least TWO. [2]
- (c) Describe how this pollution affects human health. [2]
- (d) Mention one example each about indoor pollution and outdoor pollution. [2]
- (e) Write a formula of a formation of carbonic acid. [2]

**Question 3**

- (a) Illustrate and describe watershed. [5]
- (b) List and explain the types of watersheds. [2]
- (c) Water shed plays an importance role in Bhutanese economy. Explain. [3]

**Question 4**

- (a) What do you mean by ‘Environment degradation’? [1]
- (b) Explain the importance of natural resources. [2]
- (c) List the uses of natural resources in the given boxes. [4]



- (d) What is energy conservation? List four ways, in which energy is conserved or used efficiently at homes around the world. [3]

**Question 5**

- (a) What is sustainable development? [1]
- (b) Write a short note on Gross national Happiness. [5]
- (c) Write down 4 strategies that Bhutan adopts to fulfil achieve the sustainable development through GNH? [4]

**Question 6**

- (a) What is Migration? Give an example. [3]
- (b) Give THREE reasons for migration to urban areas. [3]
- (c) What are the negative impacts of migration to urban? Mention at least TWO. [2]
- (d) What are the positive impacts of migration to urban? Mention at least TWO. [2]