

ENVIRONMENTAL SCIENCE

Maximum Marks: 70

Time Allotted: Three Hours

Reading Time: Additional Fifteen Minutes

Instructions to Candidates

1. You are allowed an **additional fifteen minutes** for **only** reading the question paper.
2. You must **NOT** start writing during reading time.
3. This question paper has **7 printed pages and one blank page**.
4. There are **twelve** questions in the paper. All questions are compulsory.
5. This paper is divided into **three sections: A, B and C**.
6. **Section A** has **fourteen subparts** which are very short answer questions. Each question carries 1 mark.
7. While attempting **Multiple Choice Questions** in Section A, you are required to **write only ONE option as the answer**.
8. **Section B** has **seven questions** which are short answer questions. Each question carries 4 marks.
9. **Section C** has **four questions** which are long answer questions. Each question carries 7 marks.
10. **Internal choices** have been provided in **two questions in Section B** and in **one question in Section C**.
11. The intended marks for questions are given in brackets [].

Instruction to Supervising Examiner

1. Kindly read **aloud** the Instructions given on page 1 to all the candidates present in the examination hall.
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SECTION A – 14 MARKS

Question 1

- (i) Which one of the following is an example of Biotic resources? [1]
- (a) Limestone in Thar desert
 - (b) Goldmines in Karnataka
 - (c) Rhinoceros in Kaziranga park
 - (d) Snowcapped mountains in Himachal Pradesh

- (ii) Given below are two statements marked Assertion and Reason. Read the two statements carefully and choose the correct option. [1]

Assertion: Genetic erosion leads to loss of biodiversity.

Reason: Soil fertility is maintained by this kind of erosion.

- (a) Both Assertion and Reason are true and Reason is the correct explanation for Assertion.
 - (b) Both Assertion and Reason are true but Reason is not the correct explanation for Assertion.
 - (c) Assertion is true and Reason is false.
 - (d) Both Assertion and Reason are false.
- (iii) The 1984 Bhopal Gas tragedy resulted in thousands of deaths and injuries. The Union Carbide company was held responsible for the damage and was ordered to compensate the victims and their families. [1]

Which principle of Sustainable Development is evident in the above scenario?

- (a) Polluter's pay Principle
 - (b) Principle of Public participation
 - (c) Principle of Precaution and Prevention
 - (d) Principle of Sustainable management of resources
- (iv) Which one of the following is an example of Tied Aid? [1]
- (a) Country X opens an international college in country Y.
 - (b) Country Y receives free food from country X due to shortage of food supply.
 - (c) Country Y receives 50 million dollars from country X to rehabilitate the flood victims.
 - (d) Country X gives funds to country Y to build a dam, but the raw material must be purchased from country X.

- (v) Study the relation between the first and the second words / terms given below and fill in the missing word / term on that basis.
- (a) National parks: Habitat centric :: Wildlife sanctuary : _____ [1]
- (b) Infiltration rate: Soil indicator :: Turbidity: _____ [1]
- (vi) Name the thinker whose idea of environment is based on Social Ecology. [1]
- (vii) Radha visited a butterfly park with her parents. She saw many bright and beautiful butterflies and was amazed to learn that they lived for a maximum period of one week. [1]
- Which life strategy do butterflies follow?
- (viii) Write the expanded forms of the following: [2]
- (a) NDIR
- (b) JFM
- (ix) Write a term for each of the descriptions given below:
- (a) Living organisms or substances derived from them that enhance soil fertility. [1]
- (b) A sign used on products to denote their specific place of origin. [1]
- (c) A branch of economics that studies the relationship between economics and environment. [1]
- (d) A curve that indicates exponential growth of a population. [1]

SECTION B - 28 MARKS

Question 2 [4]

- (i) What are *ecosystem services*? Briefly explain *any three* kinds of Ecosystem services.

OR

- (ii) Discuss *any four* steps that can be taken to reduce vehicular pollution in a city.

Question 3

A non-governmental organisation (NGO) filed a petition about the worsening air quality in a city. The air quality posed a serious health risk particularly to senior citizens and children thereby increasing the risk of heart ailments and respiratory diseases. The District Court ordered the State Pollution Control Board (SPCB) unit of the city to investigate the matter.

- (i) The State Pollution Control Board (SPCB) collected air samples from different locations in the city. [1]

Name *any one* manual technique that State Pollution Control Board (SPCB) would use to analyse the air samples.

- (ii) State *any three* characteristics of ambient air sampling process. [3]

Question 4

[4]

Discuss *any four* advantages of ex-situ conservation method.

Question 5

Pragya owns a farm on the outskirts of a city. Various vegetables and fruits are grown on her farm. Despite using conventional agrochemicals to ensure a healthy crop, the tomato plants and few other crops were infested by pests. She approached a horticulturist to find the solution. The horticulturist advised her to introduce ducks and geese on her farm to curb the growth of pests.

- (i) Which element of sustainable agriculture was advised by the horticulturist in the above case? [1]

- (ii) Pragya implemented the solution suggested by the horticulturist. It controlled the pest population temporarily to some extent. However, the problem arose again which led to a total failure of the crop. [3]

Suggest *any three* sustainable methods of pest control, other than the one suggested by the horticulturist, that Pragya can adopt.

Question 6

[4]

- (i) Discuss *any four* disadvantages of Free Trade.

OR

- (ii) Discuss the issue of Water management in Cochabamba and the civil unrest caused by it.

Question 7**[4]**

Explain *any four* advantages of Gross National Product (GNP).

Question 8

Observe the images of products 'A' and 'B' shown below and answer the questions that follow.



Product A



Product B

- (i) Name the Quality Marks applicable to the products labelled 'A' and 'B'. **[2]**
- (ii) Briefly explain the significance of Quality Marks. **[2]**

SECTION C – 28 MARKS**Question 9**

'During Covid-19 pandemic, several countries called for a subsidy on Intellectual Property Rights under TRIPS Agreement to ensure wider access to vaccines.'

(Source: pmc.ncbi.nlm.nih.gov)

- (i) In light of the above statement, explain the role of TRIPS agreement in facilitating 'wider access to vaccines'. **[2]**
- (ii) Highlight *any three* functions of World Trade Organisation (WTO). **[3]**
- (iii) Provide *any two* reasons for the transformation of GATT into WTO. **[2]**

Question 10

- (i) Analyse *any four* inadequacies in the marketing system in India that hinder the availability and accessibility of food. **[4]**
- (ii) Discuss how the growth of Transnational companies has degraded the environment. **[3]**

OR

(iii) Given below is a quote by Jane Goodall:

"We are all interconnected, people, animals, our environment. When nature suffers, we suffer. And when nature flourishes, we all flourish."

(a) Identify the Law of Ecology by Barry Commoner indicated in the above quote. [1]

(b) Discuss the ecological contribution of Wendell Berry. [3]

(iv) Classify and explain *any three* types of Social Forestry. [3]

Question 11

(i) Sarah bought bread and observed that it stayed fresh for a week. She wondered how it was possible as bread used to get spoilt very quickly earlier. [3]

What was added to the bread to increase its shelf life? State *any two* harmful impacts of this practice.

(ii) "The future belongs to nations with grains and not guns," by M.S. Swaminathan. [4]

In light of the above statement, comment on the relevance of Integrated and Sustainable approach to the issue of food security in the Third World nations.

Question 12

Read the passage given below and answer the questions that follow.

We are surrounded by plastic everywhere. It's in our phone, our clothes, our furniture and probably wrapped around our lunch. Now, imagine all that plastic multiplied by billions of people, day after day, year after year.

Every bottle we buy, every plastic packet we open adds to a mountain of waste growing by the second. It's overwhelming and seems that we are walking towards destruction. We need to turn this thing around.

(Source (edited): plasticsforchange.org)

(i) Suggest *any two* measures that an individual can take to combat the challenge discussed above. [2]

(ii) 'Every bottle we buy, every plastic packet we open adds to a mountain of waste growing by the second.' How can segregation of waste help reduce the growing 'mountain of waste'? [2]

(iii) Explain the role of Extended Producer Responsibility (EPR) in addressing the concern raised above. [3]

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