

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 above to all the candidates present in the examination hall.

SECTION A - 14 MARKS

Question 1

- (i) Type III survivorship curve is observed in a population in which many offsprings are produced, and no parental care is provided to the young ones. [1]
Which one of the following represents this kind of Survivorship pattern?

- (a) Tall trees in various forests of India
- (b) Population explosion in India
- (c) Population of birds in Corbett National Park
- (d) Population of tigers in Sunderbans

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

Assertion: Composting, one of the methods used in sustainable agriculture, helps in reducing organic waste.

Reason: The process of composting generates methane.

- (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) Mohan got transferred to a new location, where the water did not taste good and formed scales on the cooking utensils. [1]

Which one of the following chemicals present in the water caused the changes?

- (a) Nitrates
- (b) Sulphates
- (c) Clay
- (d) Faecal matter

- (iv) Agroforestry is a sustainable land use system in which forest trees are grown along with agricultural crops on the same piece of land. [1]
Which one of the following practices is an example of Agroforestry?
- (a) Teakwood trees planted on a farmland.
 - (b) Celebration of *Vanmahotsav* by planting a sapling.
 - (c) Series of trees planted along the national highways.
 - (d) Plantation of Mango trees on the Panchayat land in a village.
- (v) Study the relation between the first and the second words / terms given below and fill in the fourth word / term on that basis. [2]
- (a) *r*-strategy: Short life span :: *k*-strategy: _____
 - (b) Food additives: Citric acid :: Quality mark: _____
- (vi) Which agreement was signed among various countries to protect human society from the adverse effects of the toxic waste trade? [1]
- (vii) The latest trend among the tourists is to explore nature in its authenticity and rusticity. Name this type of tourism. [1]
- (viii) Write the expanded forms of the following: [2]
- (a) GATT
 - (b) JFM
- (ix) Write a term for each description given below:
- (a) The distribution of various age groups in a population. [1]
 - (b) The type of air quality monitoring station that collects air samples at a height for meteorological analysis. [1]
 - (c) A situation that exists when all people in a country are able to access a safe, sufficient and nutritious diet. [1]
 - (d) A measure of the quantity of oxygen consumed by micro organisms to decompose the organic matter in a water body. [1]

SECTION B – 28 MARKS

Question 2

[4]

- (i) What is IPM? Explain *any three* ways by which it is implemented.

OR

- (ii) Classify and explain *any four* kinds of Ecosystem services.

Question 3

Many popular consumer brands in India such as Nestle, McDonald's, Apple, Nike have originated in the USA. These brands have also established branches in other parts of the world.

- (i) Which term can be used to describe the above mentioned business establishments? [1]
- (ii) State *any three* impacts of such establishments on environment. [3]

Question 4

[4]

Briefly discuss *any two* advantages and *any two* disadvantages of Tied aid.

Question 5

'Reduce, Reuse and Recycle it all, no matter how small.'

- (i) Identify the type of externality associated with the three 'Rs'. [1]
- (ii) How do the three 'Rs', referred to above, act as an externality for the society at large? [3]

Question 6

[4]

- (i) The initiative of organic farming by the Cuban government has made it one of the most sustainable countries in the world.
- ✓ Justify this statement by referring to *any four* measures taken by the Cuban government.

OR

- (ii) Discuss how dry toilets are an ecofriendly alternative to the conventional toilets.

Question 7

[4]

Name and explain *any four* factors that determine the size of a population.

Question 8

Observe the picture given below and answer the questions that follow:



- (i) Name the type of conservation depicted in the picture above. [1]
- (ii) Discuss *any three* objectives of this type of conservation. [3]

SECTION C – 28 MARKS

Question 9

“We will need to come up with a new model of globalisation that recognises domestic, economic, social and environmental agendas as well as national security goals that often conflict with the demand of international business...”

(Source (edited): www.economictimes.com, Jan 11, 2024)

- (i) In the light of the pandemic Covid-19, examine the role of Globalisation in causing a health crisis across the world. [2]
- (ii) State *any three* functions of World Trade Organisation that have led to a rise in global trade. [3]
- (iii) Briefly discuss the effectiveness of Protectionism as an effort by the governments across the globe. [2]

Question 10

- (i) (a) “Humans and other species are interdependent on each other.” [1]
Which law of ecology given by Barry Commoner is being indicated here?
- (b) Discuss the contribution of Barry Commoner towards environment. [3]
- (ii) Briefly discuss *any three* techniques of Air sampling. [3]

OR

- (iii) Name *two* types of irrigation systems. Explain *any one* advantage of each type with a suitable example. [3]
- (iv) Given below are a few lines of a poem on water pollution. Read the poem and answer the question that follows. [4]

‘Water is precious, clear and blue,
But pollution makes it dirty too.
Trash and chemicals fill our stream
Muddy water spoils our dreams.’

(Source: www.teacherpayteachers.com)

In the light of the excerpt given above, suggest *any two* qualities of water that should be maintained. Give *one* reason for each suggestion.

Question 11

- (i) Briefly examine the role of Green Revolution in solving the food crisis in post-independent India. [2]
- (ii) "If agriculture goes wrong nothing else will have a chance to go right." [5]
(Source: By M. S. Swaminathan, www.mssf.org)

In the light of the above statement, discuss how the exploitation of Indian agricultural sector by the British hindered the progress of the nation.

Question 12

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

Star Industries planned to build a resort on the outskirts of a city. It submitted a proposal to the local authorities for approval. The project involved several concerns such as social costs in terms of utilisation of scarce resources and impact on various communities residing in the same area. The local authorities adopted an evaluation tool to assess the relevance of the project in the larger interests of environmental economics.

- (i) Briefly explain the kind of evaluation tool used by the local authorities to analyse the relevance of the project. [2]
- (ii) Provide *any three* reasons to justify the need for the kind of analysis referred to in subpart (i). [3]
- (iii) Briefly discuss *any two* aims of environmental economics. [2]