

# ENVIRONMENTAL APPLICATIONS

***Maximum Marks: 100***

***Time allowed: Two hours***

1. *Answers to this Paper must be written on the paper provided separately.*
  2. *You will **not** be allowed to write during the first 15 minutes.*
  3. *This time is to be spent in reading the question paper.*
  4. *The time given at the head of this Paper is the time allowed for writing the answers.*
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5. *Attempt **all** questions from **Section A** and **any four** questions from **Section B**.*
  6. *The intended marks for questions or parts of questions are given in brackets[ ].*

## ***Instruction for the Supervising Examiner***

*Kindly read aloud the Instructions given above to all the candidates present in the Examination Hall.*

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**This paper consists of 12 printed pages.**

## SECTION A (40 Marks)

(Attempt *all* questions from this *Section*.)

### Question 1

Choose the correct answers to the questions from the given options.

[20]

(Do not copy the questions, write the correct answers only.)

- (i) The main objective of the *Ramsar Convention* is to:
- (a) Protect the water bodies
  - (b) Conserve freshwater resources
  - (c) Conserve wetlands
  - (d) Construct wetlands
- (ii) In one half of the given picture, we can see a distinct discolouration of the Taj Mahal. Identify the main cause of the discolouration of this monument:



- (a) Chloro-Fluro Carbon gas
  - (b) Smog
  - (c) Acid rain
  - (d) Old age of this monument
- (iii) *Tarun Bharat Sangh* had helped the local people of Rajasthan to make:
- (a) Kunds
  - (b) Eris
  - (c) Khadin
  - (d) Johads

- (iv) Rahul, on his birthday, gave some of his old clothes to an orphanage. The children at the orphanage were happy to get the clothes and used them.

This is an example of:

- (a) Reduce
  - (b) Reuse
  - (c) Recycle
  - (d) Refuse
- (v) Panchayati Raj is a system of governance in which gram panchayats are the basic units of administration. Select the appropriate statements regarding the functions of Panchayat:
- 1. Establishment of primary health centres and primary schools
  - 2. Construction of large dams
  - 3. Development of small and cottage industries
  - 4. Construction of National highways
- (a) 1 and 2
  - (b) 2 and 4
  - (c) 3 and 4
  - (d) 1 and 3
- (vi) In the term *North-South* divide, North means:
- (a) Developed countries
  - (b) Developing countries
  - (c) European countries
  - (d) United States of America

- (vii) **Assertion (A):** Remote Sensing satellite is a good tool and a useful source for gathering environmental information of earth's atmosphere, ocean and land.

**Reason (R):** It can provide detailed information on landforms, air quality, rate of deforestation and cyclone.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true and (R) is false.
- (d) (A) is false and (R) is true.

- (viii) Identify the type of vehicle from the image given below:



- (a) Diesel vehicle
  - (b) Bio-diesel vehicle
  - (c) Electric vehicle
  - (d) Petrol vehicle
- (ix) **Assertion (A):** Tree breaks play an important role in preventing soil erosion.

**Reason (R):** Deforestation leads to soil erosion.

- (a) (A) and (R) are true and (R) is the correct explanation of (A).
- (b) (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is false and (R) is true.
- (d) (A) is true and (R) is false.

- (x) Identify the correct pair.
- (a) Dastkar – Laila Tyabji
  - (b) Gandhigram - Mirra Alfassa
  - (c) Khadi – Dr. Rajendra Singh
  - (d) Auroville – Dr. Soundram
- (xi) Which of the following statements about Natural Resource Accounting (NRA) are **APPROPRIATE**?
- 1. NRA integrates environmental factors into national economic accounts.
  - 2. NRA primarily focuses on the financial value of natural resources, ignoring their ecological value.
  - 3. NRA helps in assessing the depletion and degradation of natural resources over time.
  - 4. NRA is a tool used to measure the sustainability of a nation's economic growth.
- (a) 1, 2 and 4
  - (b) 2, 3 and 4
  - (c) 1, 3 and 4
  - (d) 1, 2 and 3
- (xii) Wind Energy \_\_\_\_\_.
- (a) requires fuel
  - (b) requires wind farms that need very less area for installation
  - (c) is eco-friendly
  - (d) is available all the time

- (xiii) Identify the technology employed by the native inhabitants of a country.
- (a) Modern technology
  - (b) Appropriate technology
  - (c) Indigenous technology
  - (d) Digital technology
- (xiv) What is the primary goal of recharging ground water aquifers?
- (a) To store water in tanks for later use.
  - (b) To restore ground water level by increasing infiltration.
  - (c) To transport water across regions.
  - (d) To irrigate crops using underground pipelines.
- (xv) Which of the following statements about *National Debt* is **TRUE**?
- (a) National debt is the total amount of money borrowed by a country's government that must be repaid.
  - (b) National debt includes the money borrowed by industrialists of a country.
  - (c) National debt has no impact on the country's economy.
  - (d) National debt is always considered a negative factor for a country's development.
- (xvi) Identify the **INCORRECT** statement with reference to water recycling.
- (a) It helps to reduce the demand for fresh water.
  - (b) Recycled water can be used for drinking purposes.
  - (c) It helps to conserve natural ecosystems by reducing water extraction.
  - (d) Treated wastewater can be reused for agricultural purposes.

(xvii) *Run-off River system* is an eco-friendly technology for generating hydro-electricity. State the correct sequence of steps for generation of electricity using Run-off River System.

1. Penstock
2. Weir
3. Generator
4. Turbine
5. River

- (a) 5, 4, 2, 1, 3
- (b) 2, 3, 5, 4, 1
- (c) 2, 1, 4, 3, 5
- (d) 1, 2, 4, 3, 5

(xviii) What is a common method to *reuse organic waste* from homes and restaurants?

- (a) Composting to create nutrient-rich soil
- (b) Incinerating the waste
- (c) Packaging the waste for landfill disposal
- (d) Diluting and releasing the waste into water bodies

(xix) Identify the alternate fuel which is produced from waste materials:

- (a) Biogas
- (b) Hydrogen
- (c) Compressed Natural Gas
- (d) Liquid Petroleum Gas

- (xx) Which of the following human activities does **NOT** contribute to soil erosion?
- (a) Deforestation
  - (b) Overgrazing by livestock
  - (c) Planting trees
  - (d) Building roads

### Question 2

- (i) Suggest *any two* methods to prevent *siltation* in waterways. [2]
- (ii) How can lane management manage the traffic effectively? [2]
- (iii) State *any three* reasons for rainwater harvesting in metropolitan cities. [3]
- (iv) Mention *any three* limitations of the usage of conventional sources of energy in power sector. [3]

### Question 3

- (i) Mention *any two* economic strategies to reduce air pollution. [2]
- (ii) *Hybrid vehicles are new age vehicles*. Why are they called hybrid? Give *one* example of a hybrid vehicle. [2]
- (iii) [3]



Study the image of a Landfill given above.

Identify *any three* potential environmental impacts of this waste treatment practice.



- (iv) *Women's rights are necessary for gender equality and women empowerment.* [3]

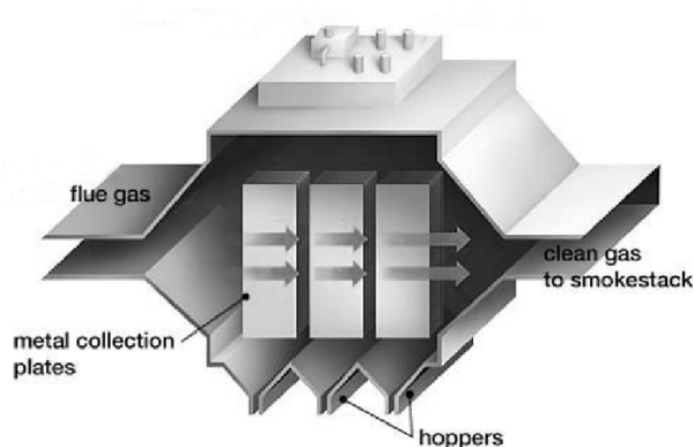
Mention *any three* roles of NGOs fighting for Women's rights.

### SECTION B (60 Marks)

(Answer *any four* questions from this *Section*.)

#### Question 4

- (i) [5]



- (a) Identify the air pollution control device shown above.
- (b) Explain the function of the device in reducing air pollution.
- (c) Describe how the device works.
- (ii) A school in a remote area is planning to install a Dry Compost Toilet (DCT), as the school has limited access to water. The school's gardener plans to use the compost produced in the school garden. [5]
- (a) Explain how a DCT works.
- (b) Write *any two* benefits of the compost produced in the toilets to the school garden.
- (iii) Delhi is the city with the highest pollution level in India. Explain *any five* [5]  
measures taken by the concerned authorities to reduce air pollution in the city.

### Question 5

- (i) Deforestation is occurring at an alarming rate, causing environmental problems. [5]  
Suggest *any five* methods to combat deforestation.
- (ii) *Increase in Gross Domestic Product (GDP) will bring about economic growth and this in turn will reduce poverty.* [5]  
Analyse, why higher GDP and economic growth might not always result in poverty reduction.
- (iii) State *any five* initiatives that can be taken by you to conserve energy and natural resources. [5]

### Question 6

- (i) Explain *any five* ways in which globalisation will help a developing country like India. [5]
- (ii) Cyclone Phailin (2013) was one of the strongest storms to hit India. Remote Sensing Satellite (RSS) helped in saving lives of over 1 million people who were evacuated from coastal areas. [5]  
Explain *any five* ways how Remote Sensing Satellite (RSS) lowers the death toll.
- (iii) An Effluent Treatment Plant is designed to treat wastewater from a manufacturing facility before it is discharged into the environment. [5]
- (a) Name the *three* key steps in an Effluent Treatment Plant.
- (b) State the impact on the second step of an Effluent Treatment Plant if its first step does not function properly.

### Question 7

- (i) Thanjavur District, known as the '*Rice Bowl of Tamil Nadu*', has an extensive network of Eris. [5]
- (a) What is *Eri system*?
- (b) Explain *any three* benefits of the Eri system in rice cultivation of Thanjavur.
- (ii) *Curitiba is often described as the most sustainable city in the world. It is largely a result of work by the visionary planner the Mayor, Jamie Lerner, who gave highest priority to the traffic management of Curitiba.* [5]



Mention the different types of buses used in Curitiba as shown in the image above.

- (iii) *Wetlands are highly productive ecosystem and maintain the ecological balance.* [5]
- With reference to the statement, mention *any five* importance of wetlands.

### Question 8

- (i) *Kanchipuram weaving industry incorporates both traditional techniques and modern technologies.* In this context state: [5]
- (a) *Any three* advantages of Indigenous weaving.
- (b) *Any two* advantages of modern mechanised weaving.
- (ii) What is the scope of alternative sources of energy in addressing current environmental challenges? Name *any two* specific alternative energy sources. [5]

- (iii) Consider a proposed large scale infrastructure project, such as the construction of a new highway, which requires Environmental Impact Assessment (EIA). [5]

Write *any five* roles that EIA can play in this project.

### Question 9

- (i) [5]



A city is considering building a waste incineration plant (as shown in above image) to manage its growing waste problem. However, some residents are concerned about the environmental and health impacts of burning waste.

- (a) Explain how incineration works as a waste management technique.
  - (b) Describe *any two* potential benefits of incineration plant.
  - (c) Discuss *any two* environmental and health concerns associated with waste incineration.
- (ii) Auroville is a township founded in 1968 in Tamil Nadu, where people from all nations live together in harmony. [5]
- (a) What are the *two* key ideals of Auroville?
  - (b) How does Auroville contribute to such ideals?
- (iii) Check dams have transformed Ralegaon Siddhi, a village in Maharashtra. [5]
- Explain *any five* ways by which check dams have changed the lives of the villagers of Ralegaon Siddhi.