

ENVIRONMENTAL SCIENCE

Maximum Marks: 80

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.

This paper consists of 11 printed pages and 1 blank page.

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Turn Over

SECTION A (40 Marks)

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

Question 1

[16]

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

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

- (i) Four Stroke Engine : Vehicular Pollution : : Electrostatic Precipitator :

- (a) Domestic Combustion
- (b) Industrial Pollution
- (c) Taj Trapezium Zone
- (d) Effective Traffic Management

- (ii) **Assertion (A):** Population control is necessary to maintain the natural resource of country.

Reason (R): The rising population exhausts the resources at a fast rate.

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

- (iii) Birth rate is also known as:

- (a) Natality
- (b) Demography
- (c) Demographic transition
- (d) Mortality

- (iv) Which of the following is an eco-friendly activity that can be practised?
- (a) Utilising fossil fuel vehicle for shorter distances.
 - (b) Using plastic bags for shopping.
 - (c) Carrying cloth bags for shopping.
 - (d) Using excess pesticides.
- (v) The town planning committee has asked you, as a student representative, to create awareness about land use amongst citizens.

Which one of the following suggestions would you give for proper land use?

- (a) Construct more green buildings.
 - (b) Increase mining and forest activity for maximum use of land resources.
 - (c) Taking measures to reduce degradation and exploitation of land resources.
 - (d) Make land available for more buildings.
- (vi) Match the following columns correctly.

Column I

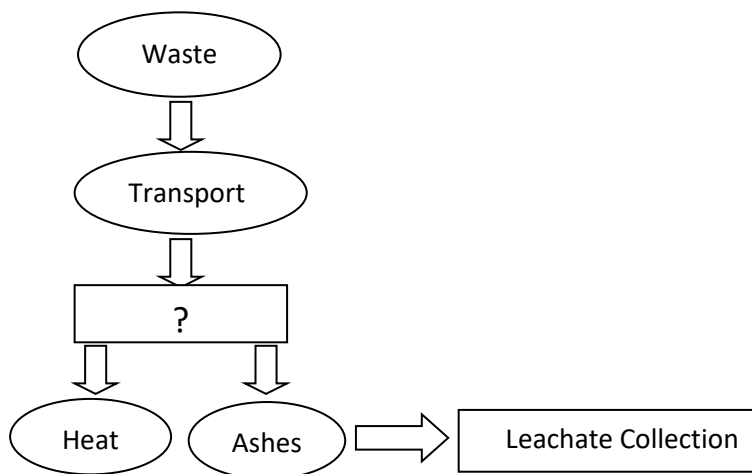
Column II

- | | |
|----------------------|---|
| 1. IUCN | A. Totally wiped-out species |
| 2. Ramsar Convention | B. Checks International trading of wildlife |
| 3. Extinct species | C. Wetland conservation |
| 4. CITES | D. Red Data book listing endangered species |

- (a) 1-A, 2-B, 3-C, 4-D
- (b) 1-B, 2-C, 3-D, 4-A
- (c) 1-C, 2-B, 3-A, 4-D
- (d) 1-D, 2-C, 3-A, 4-B

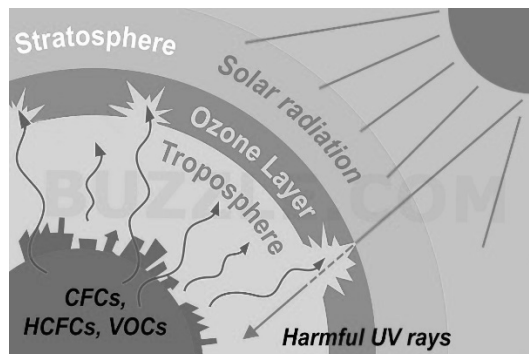
- (vii) Recycling timber is eco-friendly because:
- (a) more landfill waste is generated.
 - (b) it uses more energy.
 - (c) it decreases deforestation.
 - (d) recycled timber has more moisture.
- (viii) Soil erosion can be prevented by:
- (a) Deforestation
 - (b) Drip irrigation
 - (c) Contour ploughing
 - (d) Removal of vegetation
- (ix) Seeds of new plant varieties obtained by breeding of closely related plants are:
- (a) Dicotyledonous seeds
 - (b) Hybrid seeds
 - (c) Open-pollinated seeds
 - (d) Monocotyledonous seeds
- (x) Which of the following is an ecological approach to pest control?
- (a) Integrated Pest Management
 - (b) Use of Biofertilizers
 - (c) Integrated Nutrient Supply Programme
 - (d) Bioremediation

- (xi) Which of the following is an example of *Ex-situ* conservation?
- (a) Gir National Park
 - (b) Nanda Devi Biosphere Reserve
 - (c) Bharatpur Bird Sanctuary
 - (d) Byculla Zoo in Mumbai
- (xii) The Chernobyl disaster occurred on 26th April, 1986 in _____ releasing _____ particles into the atmosphere.
- (a) Brazil : SPM
 - (b) Ukraine : Radioactive
 - (c) Canada : Ultrafine
 - (d) Russia : VOC
- (xiii) Identify the process of waste disposal shown through a flowchart given below:



- (a) Sanitary Landfill
- (b) Incineration
- (c) Open dumping
- (d) Mulching

- (xiv) Study the picture given below. The effect of air pollution shown in this picture is:



- (a) Acid rain
 - (b) Ozone depletion
 - (c) Global warming
 - (d) Smog formation
- (xv) Identify the incorrect pair.
- (a) Montreal Protocol - Greenhouse gases
 - (b) Global Environmental Facility - supports projects on international waters
 - (c) Multinational companies - operate in multiple countries
 - (d) Biotechnology - genetically modified organisms
- (xvi) *“Follow the 3 Rs and repair the Earth.”* On the basis of this statement, identify which of the following ‘R’ is followed when fly ash from power plants is used as a cement substitute.
- (a) Reduce
 - (b) Reuse
 - (c) Recycle
 - (d) Recharge

Question 2

- (i) What is TTZ with reference to the World Heritage monument in India? [2]
Why was it formed?
- (ii) Write *any two* strategies that can be used to control population in the [2]
developing countries.
- (iii) Mention the environmental impacts of construction activities in urban areas. [2]
- (iv) *Urban residents live longer and have lower infant mortality rates than rural [2]
population.* State *any two* reasons for the given statement.

Question 3

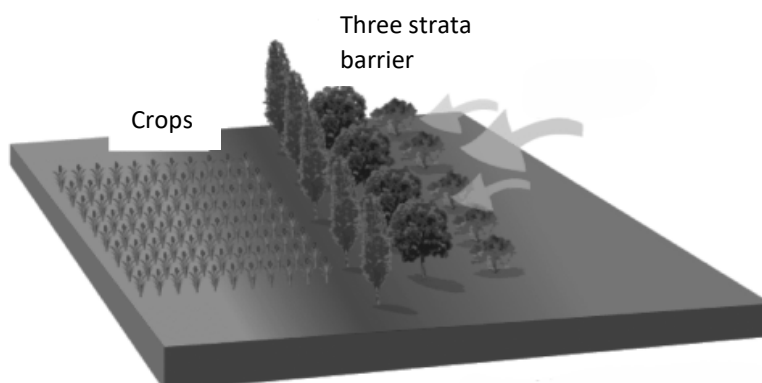
- (i) State *any two* reasons for recycling water. [2]
- (ii) *Soil becomes vulnerable to erosion through human activities.* State *any two* [2]
human activities that destroy plant cover.
- (iii) How does biotechnology help to increase food production? [2]
- (iv) Give a reason why *polyculture* is better than *monoculture*. [2]

Question 4

- (i) Why are *wetlands* important to us? [2]
- (ii) Mention *any two* unfair trade means practised by the developed countries. [2]
- (iii) What is *green manure*? Give *any one* benefit of using *green manure*. [2]

(iv)

[2]



- (a) Which farming technique is associated with the strategic plantation of trees as depicted in the image?
- (b) How does this technique contribute to a sustainable agriculture?

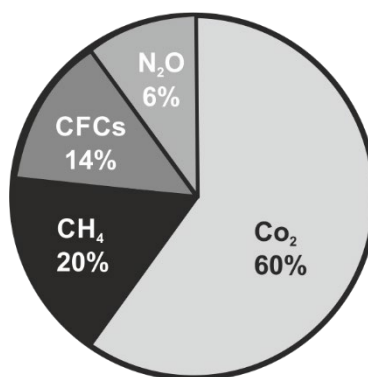
SECTION B (40 Marks)

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

Question 5

- (i) Observe the diagram showing the percentage of gases released by vehicles:

[5]



- (a) Name the gas which is released in maximum amount.
- (b) The increase of the above-mentioned gas became a global concern, therefore an international agreement was signed in Japan in 1977. Name this agreement and write *one* objective of the agreement.
- (c) How is methane used in rural as well as urban areas?

- (d) Write *one* effect of the presence of excess oxides of nitrogen in the atmosphere.
- (ii) Mushroom farming and handicraft business are small scale industries. How can these industries help to reduce poverty and bring about economic development? [5]

Question 6

- (i) The private sector and programmes like 'Swachh Bharat Abhiyan' aim to keep surroundings clean and improve the living conditions in the city. [5]
- (a) List *any two* ways in which private enterprises participate in improvement of the city.
- (b) Mention *any three* ways by which public awareness can be created to keep surroundings clean.
- (ii) (a) What is *energy plantation*? [5]
- (b) Write *any two* ways in which energy plantation is useful to humans and environment.
- (c) What forms of livelihood can people take up to depend less on forests?

Question 7

- (i) *Excessive exploitation of species, whether a plant or animal reduces the size of its population, so it becomes vulnerable to extinction.* [5]
- (a) Write *any two* causes of biodiversity loss.
- (b) Name *any two* advantages and *any one* disadvantage of In-situ conservation.
- (ii) What is *Conservation Tillage*? Mention *any three* advantages of *Conservation Tillage*. [5]

Question 8

- (i) Read the following passage and answer the questions that follow: [5]

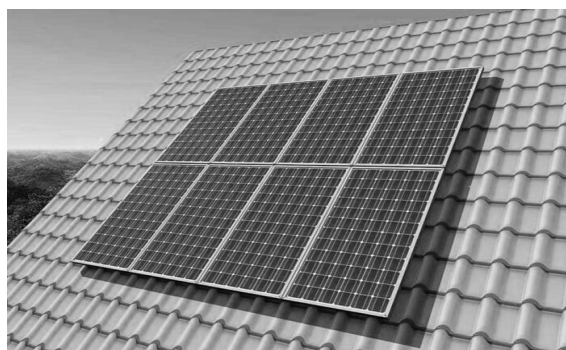
In India vermicomposting has been practiced intermittently for more than three decades. It is also taken up by farmers on an individual basis to fulfil their own needs. Farmers adopting the practice can apply for subsidies and financial assistance to set up vermicompost units through government programs.

(Source: <https://www.ceew.in/publications/sustainableagriculture-india-2021>)

- (a) What is vermicomposting?
- (b) Why are the farmers adopting the practice of vermicomposting in agricultural fields?
- (ii) What is a gene bank? List *any two* objectives of maintaining gene banks. [5]
Suggest *any two* causes of global food imbalance.

Question 9

- (i) Answer the questions based on the image given below: [5]



- (a) Name the technology shown in the image, which is used as an alternative source of energy.
- (b) Give *any two* advantages and *any two* disadvantages of the above technology which is used to save power.

- (ii) Write *any three* characteristics of a Sustainable City. Give *any two* reasons why sustainable cities are the need of the hour. [5]

Question 10

- (i) NGOs are involved in environmental protection aiming to promote ecofriendly technology, stopping degradation and reducing pollution. [5]

With reference to this, write *any two* ways by which NGO's help to protect the environment.

State *any three* ways by which NGOs can use satellite imagery to monitor the global environment.

- (ii) What do you understand by international trade? State *any four* ways in which people of a country are benefitted by this. [5]