



Ministry of Education
Chumey Higher Secondary School
Chummig: Bumthang
Academic Year 2022



ANNUAL EXAMINATION

Subject: Environmental Science
Class: IX

Writing Time: 2 hours
Full Mark: 100 marks

INDEX CODE:

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Invigilator's Initial:

READ THE FOLLOWING DIRECTIONS CAREFULLY:

1. Do **not** write for the first **fifteen minutes**. This time is to be spent reading the questions. After having read the questions, you will be given **two hour** to answer all questions.
2. Write your **Index code** in the space provided on the **top** of this cover page only.
3. In this paper, there are **two** sections: Sections A and B. All section **A questions are compulsory but attempt any FIVE questions from section B.**
4. The intended marks for the questions or parts of questions, are given in brackets [].
5. Write **all** your answers in the **question booklet** itself.
6. Remember to write **quickly** but **neatly**.

SECTION A (50 Marks)

Compulsory: Attempt all questions in this section

Question 1.

(a) Direction: Each question in this part is followed by four possible choices of answers. Choose the correct answer and Circle the correct option with pen. [25]

- (i) A group of same species that lives together in the same area at the same time is called
A. community. B. species. C. population. D. ecosystem.
- (ii) Gamri watershed is located in
A. Tashigang B. Bumthang C. WangduePhodrang D. Gasa
- (iii) The total market value of goods and services produced within the country in a given year refers to
A. Gross National Income C. Gross Domestic Product
B. Human Development Index D. Gross National Product
- (iv) The largest layer of the atmosphere is
A. Stratosphere B. Troposphere C. Mesosphere D. Thermosphere
- v. All of the following are different kinds of symbiotic relationship EXCEPT
A. Commensalism B. Competition
C. Mutualism D. Parasitism
- (vi) In which of the following resource classification, time is not a factor?
A. Biotic-abiotic B. Renewable-nonrenewable
C. Potential-actual D. Conventional-non conventional
- (vii) The major human altered ecosystem in Bhutan is
A. forest B. dams C. agriculture D. industries.
- (viii) Which one of the following does not relate to ecological provision of natural resources?
A. Dwarf bamboos in high altitude prevents soil erosion.
B. Limestones are mined for cement factory.
C. Earthworms till the soil in farmland.
D. Forest is the carbon sink for the earth.

- (ix) Which of the following is an example of renewable resource.
- A. Coal
 - B. Petroleum
 - C. Iron
 - D. Water
- (x) The term “Development” is associated with the following EXCEPT
- A. Conservation of nature and natural resources
 - B. Eradicate extreme hunger and poverty
 - C. Increase in real income per capita
 - D. Assurance of basic human rights
- (xi) Which one of the following is TRUE about non-renewable energy?
- A. They are easy to transport
 - B. They are energy efficient
 - C. They can be used only to run machines
 - D. Have minimal impact on the environment
- (xii) Floods in mountainous regions are generally caused by
- A. heavy rainfall
 - B. forest fire
 - C. deforestation
 - D. earthquake
- (xiii) Which one of the following is a climatological disaster?
- A. Flood
 - B. Landslide
 - C. Drought
 - D. Avalanche
- (xiv) Which of the following determines a biogeographical zone?
- A. Altitude
 - B. Leaf types
 - C. Climatic conditions
 - D. Plant and animals
- (xv) Fine organic or inorganic particles suspended in the air is called
- A. particulate pollutants
 - B. gaseous pollutant
 - C. aerosol
 - D. suspended particulate matter
- (xvi) This is NOT one of the following dimensions of Human Development Index
- A. your healthy long life
 - B. years of schooling you complete
 - C. income of your family
 - D. the forest cover in the village you live.

(xvii) Which practices of the following would most likely deplete a non-renewable natural resource?

- A. harvesting trees on a tree farm
- B. burning coal to generate electricity in a power plant
- C. restricting water usage during a period of water shortage
- D. building a dam and a power plant to use water to generate electricity

(xviii) One of the leading anthropogenic causes of pressure on natural resources is

- A. floods due to excessive rainfall
- B. increase in animal population
- C. increase in human population
- D. increase in sea level

(xix) The following are the geophysical disasters EXCEPT

- A. cyclones
- B. Earthquake
- C. tsunami
- D. volcanic eruption

(xx) The following are the impacts of deforestation EXCEPT

- A. transportation
- B. natural disasters
- C. soil deterioration
- D. loss of forest diversity

(xxi) Fuelwood usage will reduce

- A. greenhouse gas emission
- B. regeneration of biomass
- C. depletion of non-renewable resources
- D. eye and breathing problems

(xxii) In an open watershed, water flows from

- A. Tributary- Ocean- River
- B. Ocean-River - Tributary
- C. Tributary –River -Ocean
- D. River- Ocean- Tributary

(xxiii) Demand of oxygen in water does not increase with increase in

- A. concentration of solid waste
- B. number of aquatic plants
- C. number of aquatic animals
- D. rapid flow of water

(xxiv) Which of the following equation represents the formation of carbonic acid?

- A. $4\text{NO}_2 + \text{O}_2 + 2\text{H}_2\text{O} \longrightarrow 4\text{HNO}_3$
- B. $\text{CO}_2 + \text{H}_2\text{O} \longrightarrow \text{H}_2\text{CO}_3$
- C. $2\text{H}_2\text{SO}_3 + \text{O}_2 \longrightarrow 2\text{H}_2\text{SO}_4$
- D. $\text{H}_2\text{O} + \text{CO}_2 \longrightarrow \text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6$

(xxv) The watershed that Paachhu flows into is

- A. Dangchhu
- B. Kholongchhu
- C. Wangchhu
- D. Mangdichhu

(b) Fill in the blanks with the correct form of word/s. [5]

- (i) Every human made product is composed of at its fundamentals.
- (ii) Watersheds are separated from other adjacent watersheds by.....
- (iii) Bhutan falls under the..... hotspot.
- (iv) A kind of symbiotic relationship in which both organisms benefit is.....
- (v) The structural and functional unit of biosphere is.....

(c) Match the items of Column A with the most appropriate items of Column B. Rewrite the correct matching pairs in the space provided alongside: [4]

Column A	Column B	Answer
(i) Lithosphere	(a) Number of species in an area.	i.
(ii) Species richness	(b) Bamboo and waving.	ii.
(iii) Socio-economic	(c) Reduce native species population	iii.
(iv) Invasive species	(d) The outermost layer of the earth	iv.
	(e) The innermost part of the earth	v.
	(f) Self Consumption	

(d) Write TRUE or FALSE for the following statements. [6]

- (i) Ecological niche is the sum total of all attributes needed by an organism to live, grow and produce (.....)
- (ii) A Pitcher plant is a primary consumer. (.....)
- (iii) The hybridization between Yak and Cattle produces Zo and Zom. (.....)
- (iv) Open watershed is also called endorheic. (.....)
- (v) Nomadic migration is considered another form of migration. (.....)
- (vi) Natural resources can be depleted, but not destroyed. (.....)

(e) Give reason for the following: [10]

i. “Clouds are part of hydrosphere”.

Ans:.....
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ii. Watersheds play an important role in the Bhutanese economy.

Ans:.....
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iii. Adaptation leads to speciation.

Ans:.....
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iv. Natural resources provide a means of livelihood to human societies.

Ans:.....
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v. Air pollution is a transboundary issue.

Ans:.....
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SECTION B (50 Marks)

Attempt any five questions

Question 2.

- a. What do you understand by the term energy efficiency? Mention two ways how you can conserve energy? [3]

Ans:.....
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- b. State some human activities that alter a natural ecosystem [2]

Ans:.....
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- c. Differentiate between parasitism and mutualism type of relation. [3]

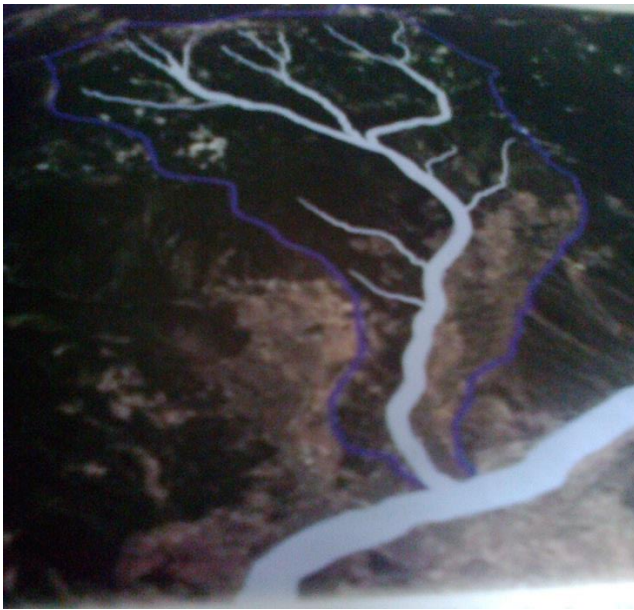
Ans:.....
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- d. How many biological corridor Bhutan have? What is the significant of biological corridor? [2]

Ans:.....
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Question 3

(a) Study the picture of Woochu watershed and answer the following questions: [3]



i) Identify the type of watershed.

Ans:.....
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ii) What does the dark blue line represent?

Ans:.....
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iii) Briefly describe the watershed.

Ans:.....
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(b) Differentiate between the following pairs.

[4]

(i) Development parameters and development indicators.

Development parameters	Development indicators

(vi) Renewable and non-renewable energy.

Renewable energy	Non-renewable energy

(iii) Volcanos and earthquakes

Volcanos	Earthquakes

(iv) Eutrophication and biomagnification

Eutrophication	Biomagnification

(c) How can you practice sustainable development? State two ways.

[2]

Ans:.....

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(d) What are the two types of ecosystems?

[1]

Ans:.....

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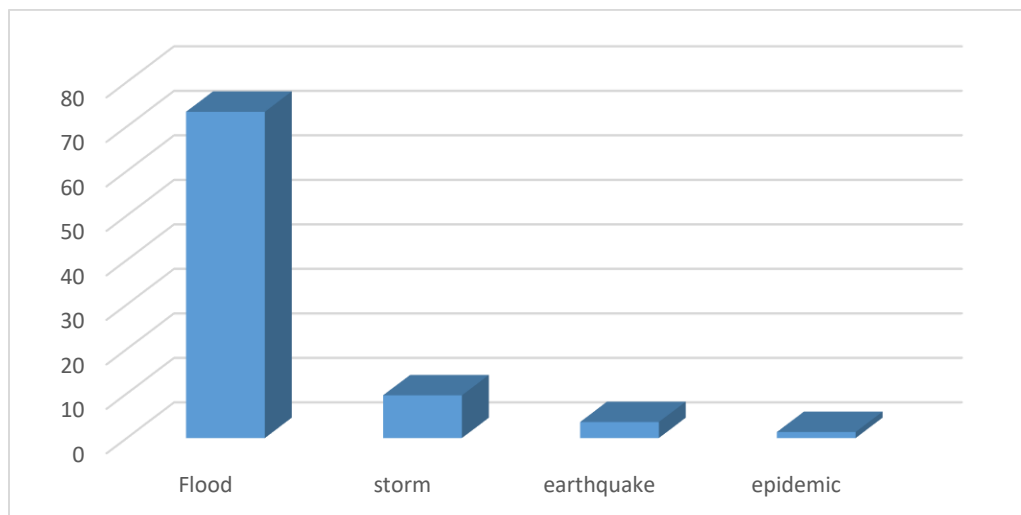
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Question 4.

(a) The graph shows the percentage of reported people killed by disaster type. Study the graph and answer the following questions. [5]



i. What are the types of disasters experienced by Bhutan?

Ans:.....
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ii. Which disaster has the greatest effects on the lives of people? Why?

Ans:.....
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iii. Which disaster has the least effects on the lives of people?

Ans:.....
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iv. Why is Bhutan vulnerable to disaster by storm?

Ans:.....
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v. What measures can you propose to your community to minimize the occurrence of such disasters?

Ans:.....
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(b) Describe the role of food chain in the balance of nature?

[2]

Ans:.....
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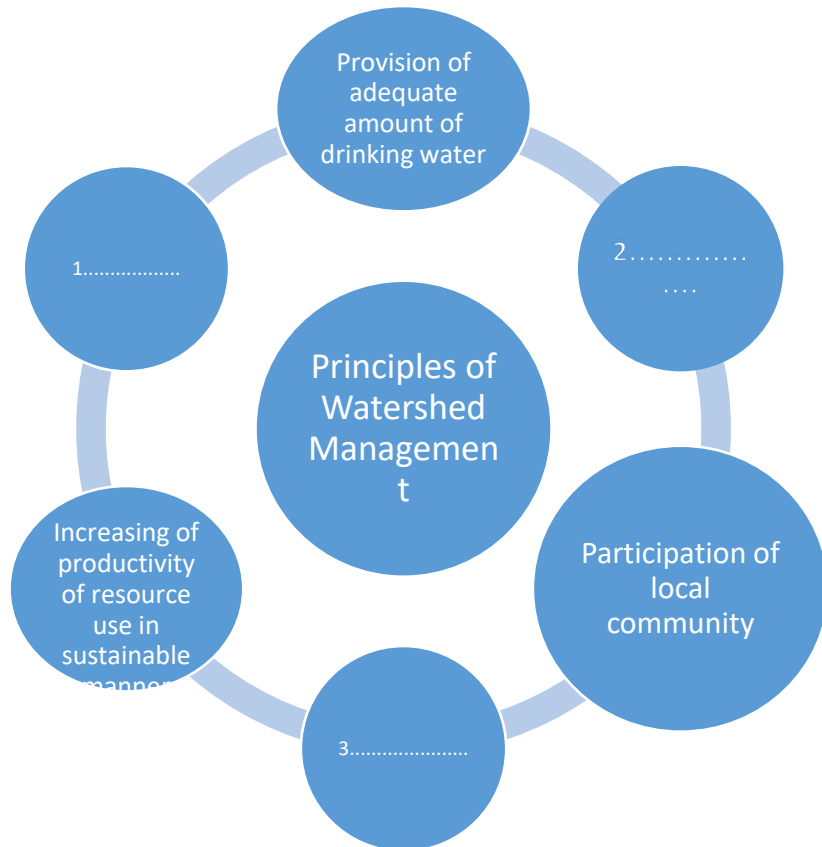
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(c) Explain the three levels of biodiversity with an example each. [3]

Ans:.....
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Question 5

(a) The diagram represents the Principles of Watershed Management. Complete the diagram by filling in the missing principles. [3]



(b) Explain GNH.

[2]

Ans:.....
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(c) What are the different types of natural resources?

[2]

Ans:.....
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(d) Kinley walks to office everyday instead of driving the car. What are the benefits of his action?[2]

Ans:.....
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(e) What are the causes of landslides?

[1]

Ans:.....
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Question 6.

(a) Discuss migration patterns.

[2]

Ans:.....
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(b) What is parasitism?

[2]

Ans:.....
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(c) Write down two importance of watersheds in Bhutan.

[2]

Ans:.....
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(d) What will be the impacts of excessive mining of minerals on land resources?

[2]

Ans:.....
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(e) State two importance of environmental science.

[2]

Ans:.....
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Question 7

(a) Explain the anthropogenic causes for the degradation of biodiversity?

[3]

Ans:.....
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(b) Why is “green tax” levied on the fuel for cars?

[2]

Ans:.....
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(c) How can you relate biodiversity to watershed?

[2]

Ans:.....
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(d) What are glacier lake outburst floods? List down the major causes of glacier lake outburst floods in Bhutan?

[3]

Ans:.....
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