



ཤེས་རིག་ལྷན་ཁག།
ལྷོ་ཐིང་གི་འབྲིང་རིམ་སློབ་གྲྭ་གོང་མ།



**MOTITHANG HIGHER SECONDARY SCHOOL
TRIAL EXAMINATION , 2019**

Class:12 Arts. Section.....

Writing time: 3 Hours

Name:.....Roll No:.....Total marks: 100

Environment Science.

READ THE FOLLOWING DIRECTIONS CAREFULLY:

1. The first fifteen minutes of the examination are for reading the paper only. Students must **NOT** start writing during this time.
2. This paper has two sections: A and B.
3. **Section A** contains objective questions and all questions are compulsory
4. **Sections B** contains extended response questions, wherein you have to answer **any six** out of seven questions.
5. The intended marks for questions or parts of questions, are given in the brackets ().
6. Read the directions to each questions carefully and write all your answers in the answer sheet provided separately.

Section A (40 Marks)

Compulsory: Attempt all questions.

1. **For each question there are four alternatives A, B, C and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there are more than one choice circled, NO score will be awarded. [1X15=15 marks]**

1. It is usually desirable to manage soil in ways to maintain high infiltration rate so that more

- A. water flows into the river, especially during rainy weather.
- B. water becomes available to sustain plant productivity.
- C. leaching of chemicals takes place from the soil surface.
- D. erosion take place from the soil surface.

2. Generally, most of the macro-nutrients in the soil are readily available at pH values between

- A. 4.5 - 5.5
- B. 5.5 - 6.5
- C. 6.5 - 7.5
- D. 7.5 - 8.5

3. The conversion of chemical energy to electrical energy in a fuel cell occurs by using a reaction that

- A. eliminates combustion of fuel.
 - B. requires high combustion of fuel.
 - C. requires low combustion of fuel.
 - D. requires no fuel.
4. Which of the following is not a characteristic of a green economy?
- A. Efficient resource usage.
 - B. Achieving high economic growth.
 - C. Technologies replacing human labour.
 - D. Reducing carbon emission.
5. The realised niche of an organism is the
- A. area a species can occupy in the face of exploitive competition.
 - B. habitat of a species within a community resulting from clumping.
 - C. habitat that exists in nature as opposed to the ideal.
 - D. life pattern that the organism assumes.
6. A landslide taken place at the roadside has led to removal of existing ecosystem and exposure of fresh surfaces to various climatic factors. It is best described by
- A. aggregation
 - B. reaction
 - C. nudation
 - D. competition
7. When a garden is left uncultivated, the type of succession that can occur in that area of land is
- A. autogenic
 - B. allogenic
 - C. primary
 - D. secondary
8. On a rock outcrop that has never been home to living organisms, which organism is likely to grow first on it?
- A. Grass
 - B. Wildflowers
 - C. Algae
 - D. Lichen
9. Which of the following does NOT describe a sustainable society?
- A. Meets the need of the people without compromising the needs of future generations.

- B. Meets its economy and population size without exceeding the carrying capacity of the environment.
- C. Utilises non-renewable resources for the maximum benefit of the current generation.
- D. Lives off income without depleting its natural capital.

10. What major threats can we expect on the environment as a result of the expansion of agricultural and constructional activities?

- I. Landslides
- II. Soil erosion
- III. Desertification

- A. II only
- B. I and II
- C. II and III
- D. I, II and III

11. In Figure below, factories and vehicles emit different gases which pollute the atmosphere. As a result, the man in the figure will be more prone to



- A. skin cancer.
- B. rashes on the face.
- C. neck stiffness.
- D. respiratory disorders.

12. Genetic pollution which is a result of genetic engineering poses great threat to the health of the environment because it

- A. causes mutation in the organisms.
- B. may lead to the extinction of wild varieties.
- C. produces superior individuals.
- D. cannot be prevented.

13. The Taj Mahal is said to be suffering from “Marble cancer”. What do you think is Marble cancer?

- A. A large number of fungus in Taj Mahal marbles.
- B. Yellowing of marbles on account of soot particles.
- C. Acid rain which corrodes marble.
- D. Smoke filling the Taj Mahal from adjoining industries.

14. If there is an outbreak of pest in the agriculture field, the best adaptation measure to adopt is

- A. fallowing the field.
- B. applying pesticides.
- C. catch and kill method.
- D. introducing pest resistant crops.

15. Identify the objectives of the National Biosafety Framework (NBF) from the list provided below:

- I. Monitor the exports of foods and seeds to control any illegal transboundary movement of GMOs.
- II. Monitor the illegal planting of GMOs through seeds smuggled from neighbouring countries.
- III. Evaluate reports on applications to export GMOs.
- IV. Monitor the field trials for GMOs initiated by different organisations.

- A. I and II
- B. I and III
- C. II and III
- D. II and IV

1. **Fill in the blanks.** [½X10=5 marks]

- a. Electric fencing and land use planning are some solutions to _____
_____ conflict.
- b. There were 15 species of invertebrates in a pond. The removal of one species from the pond led to decrease in the species composition. The species removed was likely to be _____ species.
- c. The capacity of a biologically productive area to generate an ongoing supply of renewable resources and to absorb its wastes is known as _____.
- d. Unsustainable consumption and production patterns would result in huge _____ costs.
- e. The environmental clearance application for any project in our country is accessed from _____.
- f. Tool for verifying compliance with the environmental laws and regulations and evaluating the effectiveness of EMS is _____.
- g. Hybrid vehicles have a combination of gasoline and _____ engine to power a vehicle.
- h. As the amount of organic matter in water increases, the chemical oxygen demand _____.
- i. The principle of pitcher irrigation is similar to that of _____ irrigation.

1. Match the items of Column A with the most appropriate items of Column B. Rewrite the correct matching pairs. [$\frac{1}{2} \times 10 = 5$ marks]

Column A	Column B	Answers.
1. Commercial and economic benefits to local community.	a. Hypothesis	
2. immediate survival assistance to the victims of the disaster.	b. Early recovery	
3. systematic efforts to analyse and manage the causal factors of disasters.	c. Emergency relief	
4. Rose plant flowering early in the school is due to increase in temperature.	d. Tourism	
5. Does rose plant flower earlier compared to previous years?	e. Hypothesis	
6. Forms ozone layer	f. ISO	
7. reduces oxygen carrying capacity of blood	g. Question	
8. Formulate policies and measures for the safety of citizens and environment	h. Carbon monoxide	
9. Publication of standards for sustainable development	i. Biodiversity Act of Bhutan.	
10. A tool for identifying and evaluating the potential environmental impacts	j. Oxygen	
	k. LCA	

4. Write TRUE or FALSE against the following statements. Rewrite the false statements in the correct forms. [1 X5 = 5 marks]

- i. Fuel cells are less polluting and less expensive.
- ii. Different species can share the same habitat, but competition among them is reduced if they occupy different niches.
- iii. The main objective of sustainable development is to focus only on the natural environment.
- iv. Lichen is usually found in a climax community.
- v. An organism at the consumer level has more ecological footprint than organism at the producer level.

Ans: -----

5. Answer the following questions briefly. (1X10=10 marks)

- a. Climate change mitigation and adaptation are interlinked with sustainable development. Justify. [2]

- b. If you were the owner of a farmland on a steep slope, which irrigation method would you use? Why? [2]

- c. "Green washing" is a term used to describe a claim made by companies stating their product and practices to be "green" even though their products and services may not be necessarily be environmentally friendly. This is generally done through advertisement and marketing in order to create an image and attract business. Should the regulatory authority ignore, restrict or encourage such practices? Comment. [2]

- d. Explain two benefits of energy conservation? [2]

- e. How can the knowledge of soil properties be useful to farmers? [2]

Section B (60 marks)
Answer any SIX questions.

Question 1

- a. On a hazy day in Pasakha, the level of carbon monoxide was recorded as 12 ppm. The standard amount of carbon monoxide is 9 ppm.

- i. What is the air quality index (AQI) of Pasakha? [1]

ii. What would be the implications of this air quality on the local community? [1]

iii. Which group of people are likely to be affected more by this air quality? [1]

b. How does Green Economy help in addressing the climate change issues? [2]

c. How does biodiversity help to reduce the impact of natural disasters? Mention any two examples. [2]

d. Read the given situation to answer the questions that follow:

Sonam wants to buy a house in Thimphu. He has two options from which he needs to make a choice. The first house is located in the city while the second one is located in the suburb of Thimphu. The second house has a beautiful surrounding, continuous water supply and no noise pollution. Sonam approaches you to help him make a choice.

i. Which ESV method would you use to help Sonam make a choice? Why? [1]

 ii. What is the presumed outcome obtained from the method chosen? [1]

 iii. How does ecological service influence the pricing of the house in this method? [1]

Question 2.

a. Carefully observe Figure given below and answer the questions that follow:



a.

b.

i. What do picture (a) and (b) in Figure above represent? [1]

ii. Explain the factors that may bring changes in the physical features in the pictures. [2]

iii. Identify the disaster associated with the figures and propose mitigation measures. [2]

iv. Mention two ways to reduce above disasters in our country. [2]

b. Why is risk assessment important for disaster management plan? [2]

c. Why is community participation important in disaster management? [1]

Question 3.

a. Read the extract provided in the box and answer the following questions:

Bhutan's Crown Jewel, the Manas National Park represents the largest example of tropical and sub-tropical ecosystems in Bhutan. With its thousands of animal and plant species, many globally endangered, it is not only the most diverse protected area in the Kingdom but also one of the world's biologically outstanding sites. Lying in south central Bhutan, Manas is connected at the

southern border with India's Manas Tiger Reserve, a World Heritage Site. To the north, it borders the Jigme Singye Wangchuck National Park. Royal Manas was designated a wildlife sanctuary in 1966 making it Bhutan's oldest protected area. The area was upgraded to a National Park in 1993.

i. Where is the Manas National Park located? [1]

ii. Why is this park nationally and globally important? [1]

iii. What could be the factors that have favoured this area to have diverse flora and fauna? [2]

iv. Differentiate between a Wildlife Sanctuary and a National Park? [2]

v. Write down some of the economic benefits derived from the area by the people in the locality. [2]

b. The use of GMOs for further reproduction of organisms is banned in Bhutan. What do you think are the reasons for doing so? [2]

Question 4.

a. Table given below shows the loss of crops as a result of human-wildlife conflict in one of the Dzongkhags. Study the Table and answer the following questions:

Metric tons of crops lost to wildlife in 2014

Chiwog	Wildlife	Paddy lost	Wheat lost	Maize lost	Barley lost	Buckwheat Lost	Potato lost	Vegetable lost	Total MT lost
Kuengarabten Changrey	Wild Pigs	12	0.5	6	0.1	8.4		6	33.1
	All other wildlife	0.4						6	6.0
Yussa	Wild Pigs	11.8	1	18	1.1	7	4	3	46.0
	All other wildlife							4.5	4.5
Takse - Tashidingkha	Wild Pigs	14.7	1.5	7.2	1.4	4.2	2	6	37.1
	All other wildlife							9	9.0
Samcholing Khatoe	Wild Pigs	10.2	1.7	14.4	2.8	9.1		6	44.3
	All other wildlife							3	3.0
Samcholing Khamey	Wild Pigs	15.3	2.8	18	0.5	7		3	46.7
	All other wildlife							3	3.0
TOTAL		64.6	7.5	63.6	6.0	35.7	6.0	49.5	233.1
NB: All other wildlife includes deer, sambar, monkeys and porcupines.									

i. Which crop is more prone to be damaged by wild animals? [1]

Question 5.

a. Define the following terms with examples. [2x5= 10]

1. **Super weeds:** -----

2. **Genetic contamination**-----

3. **Endemism;** -----

4. **Bio-safety**-----

5. **Resilience;** -----

Question 6.

a. Study the figure given below and answer the questions that follows,



i.Planting of trees is an example of both mitigation and adaptation measure for climate change. Justify. [2]

ii. How does plantation help to achieve carbon neutral policy of the country? [1]

iii.Explain the impact of climate change on the people of Bhutan. [3]

b. State the importance of phenology knowledge in understanding climate change? [2]

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iv.Reducing, reusing, recycling and remanufacturing things contribute towards reducing greenhouse gases in the atmosphere. Give an example of each process. [2]

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v.‘Risk management is guided by the outcome of risk assessment’. Justify with suitable example. [2]

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vi.What is the difference between bioremediation and phytoremediation technologies? [1]

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