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མུ་ཏིག་ཐང་འབྲིང་རིམ་སློབ་གྲྭ་ཤོང་མ།



MOTITHANG HIGHER SECONDARY SCHOOL
THIMPHU THROMDEY
TRIAL EXAMINATION – 2020

Name:

Invigilator's Initial:

Section Roll No.:

Class X

Writing Time: 2 Hours
Environment science

Total Marks: 100

READ THE FOLLOWING INSTRUCTION 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 hours** to answer all questions.
2. In this paper, there are two sections: **A and B**. Section **A** is compulsory. You are expected to attempt any **five** questions from section **B**.
3. The intended marks for questions or parts of questions, are given in the brackets [].
4. This question booklet contains 12 **pages**. Check whether all the pages are there or not.

For chief markers and markers use only

Section	A					B						Total	
Question. No.	1a	1b	1c	1d	1e	2	3	4	5	6	7		Chief Marker's signature
Marks	25	5	5	5	10	10	10	10	10	10	10		
Award													
Changes													
Marker's initial													

SECTION A

(50 Marks)

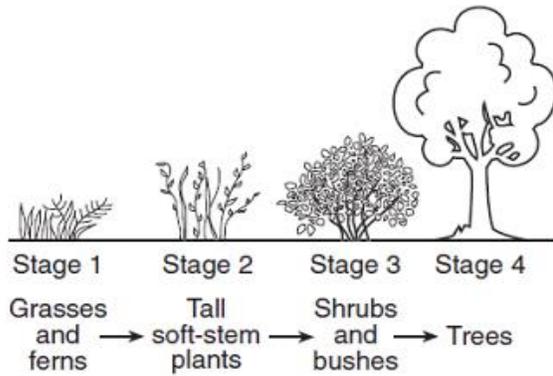
Answer ALL questions.

Question 1

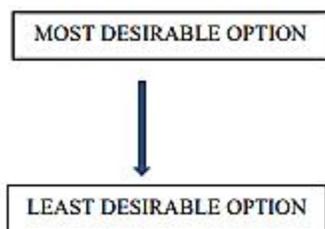
I. Direction: For each question, there are four alternatives: A, B, C and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there is more than one choice circled, NO score will be awarded. [25 Marks]

- 1) The use of goods and services by an individual is called
 - A lifestyle.
 - B production.
 - C manufacture.
 - D consumption.
- 2) Carbon cycle is essential biochemical cycle that maintains nutrients in the soil. Name the biotic component in the carbon cycle.
 - A Air
 - B Tree
 - C Water
 - D Factory
- 3) The current pandemic due to coronavirus that the world is grappling with can be classified as
 - A biological disaster.
 - B geo-physical disaster.
 - C hydrological disaster.
 - D climatological disaster
- 4) Rich people tend to consume more and produce more waste. This practice threatens our existence and that of many organisms on the planet. The above statements best describe
 - A conservation.
 - B over-harvesting.
 - C ecological footprint.
 - D sustainable economy.
- 5) Tashi owns 30 acres of land. Out of 30 acres, 10 acres of land is used for paddy cultivation, 5 acres as pasture and 10 acres as orange orchard, while 5 acres is barren land. The total bio-productive land is
 - A 10 acres.
 - B 15 acres.
 - C 25 acres.
 - D 30 acres.
- 6) One of the goals of the Convention on Biological Diversity is ‘sustainable use of the components of biodiversity’. This goal
 - A prevents overharvesting.
 - B affects life style adversely.
 - C increases ecological footprint.
 - D decreases the country’s economy

- 7) After a forest fire, an ecosystem undergoes a change over a long period of time as shown in the diagram below. Such ability of an ecosystem to regenerate after disturbance is

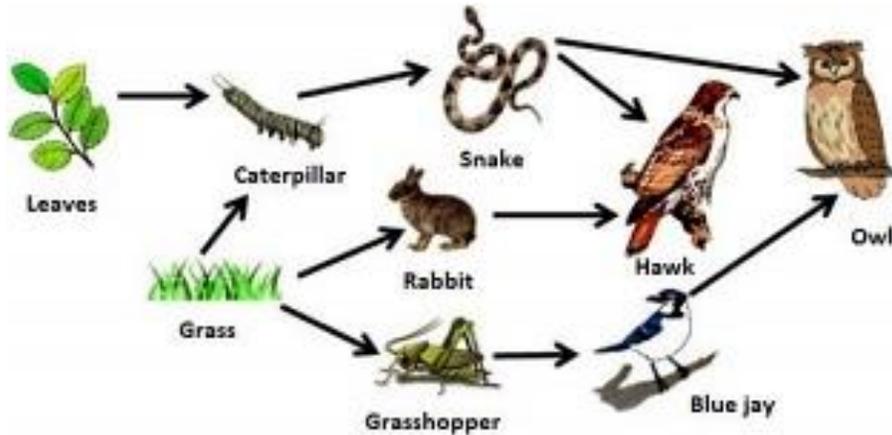


- A phenolgy.
 B evolution.
 C resilience.
 D resistance.
- 8) Exposure to ultra violet radiation could have serious impacts on physiological processes in plants and animals. Identify the layer of gas that protects us from such radiation.
- A ozone
 B oxygen
 C nitrogen
 D carbon dioxide
- 9) Which of the following is **NOT** a part of geophysical disaster?
- A volcano
 B tsunami
 C earthquake
 D storm surge
- 10) Biotic potential is the ability of organisms to grow in a population without limit. The organisms will have maximum biotic potential when
- A population grows beyond carrying capacity.
 B the climatic conditions are unfavorable.
 C resources available are unlimited.
 D resources available are limited.
- 11) Which one of the following sequences would best fit the waste management hierarchy given below?



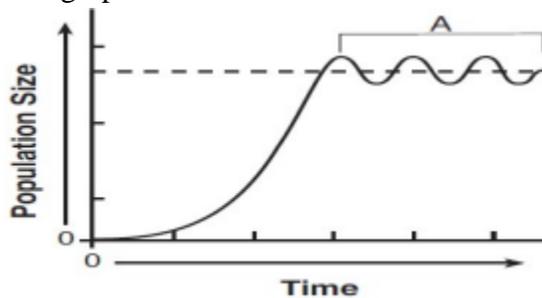
- A Refuse → Reuse → Reduce → Recycle → Disposal
B Refuse → Reduce → Reuse → Recycle → Disposal
C Refuse → Reduce → Recycle → Reuse → Disposal
D Refuse → Recycle → Reuse → Reduce → Disposal
- 12) Biodiversity conservation ethics are deeply rooted in the Bhutanese culture and tradition. One such cultural practice is ‘ridam’ which refers to refraining for a certain period from
- A using water resources humans.
B grazing of animals in the forest.
C human activities in the forests.
D killing of animals.
- 13) Ecotourism is considered as a sustainable developmental strategy because it
- A respects the local culture and traditions.
B improves the livelihoods of the people in the community.
C leads to exchange of positive experiences between host and guest.
D contributes to biodiversity conservation and income generation as well.
- 14) Read the dialogue between two friends.
- Rangjung:** “In recent years I feel it is getting hotter.”
Malaika: “That’s right, even crop yield is decreasing now.”
Rangjung: “Water sources are also drying up.”
Malaika: “True, often we are getting sick these days.”
What do you think the friends are talking about?
- A Human health
B Heavy precipitation
C Impact of climate change
D Crop production over the decade
- 15) The large-billed crows, a crow species common in Bhutan, have become a rare sight in the country’s urban areas over the years. Conservationists say the population of the bird is diminishing significantly as it falls prey to house crows believed to have migrated from India. The above description best explains the threat to biodiversity due to
- A climate change.
B invasive species.
C crop production.
D habitat destruction
- 16) Bhutanese farmers are still practicing traditional farming in many parts of our country. What is the main advantage of traditional farming over modern farming practices?
- A high yield
B low quality
C greater genetic variation
D better adaptability to climatic condition

- 17) The main idea of conserving energy is for the purpose of
- A energy security.
 - B cutting on the electricity bills.
 - C protecting the hydro power plant.
 - D encouraging the use of firewood.
- 18) Which one of these is the biodiversity conservation initiative taken by our government?
- A Implementation of Green tax policy
 - B Inviting tourists from other countries
 - C Establishment of parks and sanctuaries
 - D Implementation of environmental impact assessment
- 19) In the figure below, identify the secondary consumers.



- A owl, hawk, blue Jay
- B snake, hawk, blue Jay
- C snake, rabbit, grasshopper
- D caterpillar, rabbit, grasshopper

- 20) The graph below indicates the size of a deer population over a period of time



- The section of the graph labelled 'A' represents
- A extinction of population.
 - B population at equilibrium.
 - C biodiversity within the species.
 - D nutritional relationships of the species.

- 21) Bhutan is carbon negative. This means that, Bhutan
- A produces more greenhouse gases than it emits.
 - B soaks up more greenhouse gases than it emits.
 - C produces more inert gases than it emits.
 - D soaks up more inert gases than it emits.
- 22) Which one of the following is the most common type of disaster in our country that has major impact on the environment?
- A Drought
 - B Forest fire
 - C Avalanches
 - D Earth quake
- 23) Rubesa in Wangdiphodrang is well-known for high wind velocity. The dzongkhag authority therefore, decided to install wind mills to generate power for the development of town as shown in figure below. Which statement is correct about this installation?
- A It is inexpensive.
 - B It is renewable resources.
 - C It is non-renewable resources.
 - D It is better than hydro power for a mountainous country
- 24) Dradrul has been observing the pattern of a mango tree for a year. He has recorded the time and season of budding, flowering, fruiting and shedding of leaves. Which of the following event is best described in the above statement?
- A Ecology
 - B Migration
 - C Phenology
 - D Global warming
- 25) Denitrifying bacteria are important in the nitrogen cycle because they convert
- A nitrates to atmospheric nitrogen.
 - B ammonium to nitrites.
 - C nitrites to nitrates.
 - D nitrates to nitrites.

II. Fill in the blanks with appropriate words.

- i. When the pressure on natural resources....., the availability of resources becomes limited.
- ii. Information about patterns and life cycle events of organisms in natural environment is termed as
- iii. An initiative taken by our government to conserve biodiversity and boost the economy of the local communities through tourism is
- iv. The practice of using resources by present generations without compromising the needs of future generation is termed as practice.
- v. Botanical garden at Babesa and Takin zoo at Motithang are examples of conservation.

III. Match column A and B in the space given blanks

Column A	Column B
i. providing food, water and emergency health care.	a. phenology
ii. Decision to buy florescent tubes and LED bulbs for household use.	b. disaster rehabilitation
iii. farmers calendar	c. energy conservation
iv. how close in number the species are in an ecosystem.	d. hydropower
v. Energy produced using the potential of fast flowing water.	e. Increase in toxic waste.
	f. species evenness
	g. disaster relief
	h. species diversity

Answer

Column A	Column B
i. providing food, water and emergency health care.	
ii. Decision to buy florescent tubes and LED bulbs for household use.	
iii. farmers calendar	
iv. how close in number the species are in an ecosystem.	
v. Energy produced using the potential of fast flowing water.	

IV. State TRUE or FALSE for the statements given below. Rewrite the false statements in the correct form. [5]

- a. Advancement in science and technology has brought about major changes in the people's lifestyle.
- b. People in Thimphu will have smaller ecological footprint than the people in Laya.
- c. Greenhouse gases such as chlorofluorocarbons in the presence of ultraviolet rays help to retain ozone layer.
- d. As the average global temperature rises, average precipitation decreases due to less evaporation.
- e. When our lifestyle gets better, consumption of resources would decrease.

Ans.

- a.
- b.
- c.
- d.
- e.

Section B (50 Marks)
Answer any FIVE questions

Question 2

a) Use the following data to answer the questions that follow.

Sl No	Name of species	Number(n)	n(n-1)
1	Blue pine	4	12
2	Aspen	5	
3	Maple	3	
4	Betula	4	12

1. Fill up the empty space in the table. (1)
2. Calculate Simpson's diversity index. (2)

3. What is your conclusion about the species diversity? (1)

b) Explain the relationship between population and carrying capacity in an ecosystem? (2)

c) What is greenhouse effect? Mention TWO causes of greenhouse effect. (2)

d) How is habitat destruction a threat to biodiversity? Justify with one reason. (2)

Question 3

- a) According to the Land Act of Bhutan 2007, farmers are not allowed to convert their 'Chuzhing' to 'Kamzhing'. What would happen if this restriction is not implemented? (2)
- b) Forest is an important bio-productive area in Bhutan'. Mention TWO reasons to support the statement. (2)
- c) Overharvesting of natural resources leads to depletion and at times extinction of the natural resources. As an environmental student, how would you replenish the extracted natural resources? State at least TWO measures. (2)
- d) "Hydropower is the cleanest energy source of all." Do you agree with the statement? Justify. (2)
- e) Bhutan has many endangered animals that are protected in large parks and sanctuaries. Should the government continue to protect these animals? Justify with TWO reasons. (2)

Question 4

- a) “Landfills are best solution to all kinds of waste.” What is your opinion on this statement? Support your answer with THREE reasons. (3)
- b) The use of land continuously changes from one form to another. This are called as land use transformation. List TWO examples to show how land use is transformed. (2)
- c) Bhutan has set an exemplary role in protecting the biodiversity and safeguarding the country’s natural resources. State THREE initiatives taken by Bhutan. (3)
- d) “Traditional farming method is more desirable than modern farming method for Bhutan” What is your opinion on this statement? Support your answer with TWO reasons. (2)

Question 5

- a) How does environmental degradation impact carrying capacity of an ecosystem? (2)
- b) Why do you think Bhutan should maintain 60% forest cover at all times to come? (2)
- c) Forest fires are common in Bhutan and it is a national concern. Suggest TWO ways to prevent forest fire. (2)
- d) Our government encourages the public to use electric cars. Why do you think the government does it? (1)
- e) What is energy conservation? Write TWO ways of conserving energy at home. [2]

f) Write TWO application of solar energy in Bhutan. [1]

Question 6

a) Climate change is a major global issue. Describe any TWO indicators which justifies that climate change has occurred. (2)

b) Explain THREE purposes of energy conservation. (3)

c) Explain exponential and logistic growth of population with the help of graphs. (4)

d) Biogeochemical cycles maintain the health of the environment. Justify. (1)

Question 7

a) What is the aim of International Plant Protection Convention? Who is the focal agency for this convention in Bhutan? (2)

b) In what ways do humans interfere with the interactions of the organisms in an ecosystem? Explain any TWO ways. (2)

c) There are many protected areas in Bhutan which have improved the livelihood of the Bhutanese. Do you agree or disagree with this view? Support your statement with TWO reasons. (2)

d) Briefly explain any TWO importance of studying phenology. (2)

e) Should cordyceps collection be allowed for all Bhutanese nationals? Justify your opinion. (2)