

## ANSWER ALL QUESTIONS

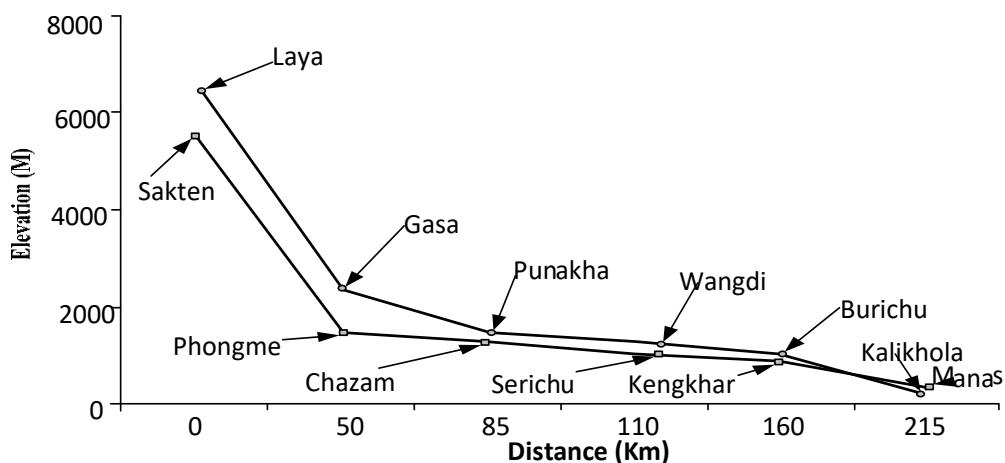
**Direction:** For multiple choice questions, there are four alternatives: A, B, C, and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there is more than one choice circled, NO score will be awarded.

### Question 1

a) Ecological footprint of global food best refers to [1]

- A amount of environment necessary to produce goods and services to support life.
- B size of cultivable land necessary to produce food to support a particular life.
- C quality of water required to produce goods and services.
- D amount of waste generated by the consumers.

b) Study the figure given below to answer the question that follows.



Do you think people living in Gasa produce the same agricultural products as people living in Punakha? Give THREE reasons. [3]


c) With increase in population and rapid developmental activities, land degradation has become a major issue. Write down any **SIX** measures to solve the problem. [6]


## Question 2

a) The scorching of stem near the soil surface is known as [1]

- A stem girdle.
- B freezing.
- C chilling.
- D sunclad.

b) For the first time ever, Toupo is able to get weather updates through the Bhutan Broadcasting Services (BBS) and long term weather data from the Department of HydroMet Services (DHMS). This helps him with the cultivation of different crops. Explain **THREE** advantages of weather updates. [6]

c) Explain **THREE** applications of remote sensing in agriculture.

[3]

### Question 3

a) Write **TRUE** or **FALSE**.

Human beings have 24 pairs of chromosomes. \_\_\_\_\_.

[1]

b) A farmer wants to try growing a new variety, F1 hybrid in her field.

i. What advice would you give her about sowing the hybrid?

[1]


ii. State **TWO** results of sowing the variety.

[2]


c) Biotechnology has become an indispensable tool in agriculture to gain food security. Write down **THREE** merits and **THREE** demerits of incorporating biotechnology in agriculture. [6]

## Question 4

a) "It is mating of unrelated pure bred animals in the same breed. The animals do not have common ancestors on either side of their pedigree up to four to six generations." [1]

The above statement best describes

- A cross breeding.
- B pure breeding.
- C line crossing.
- D out crossing.

b) Dairy farming located near urban areas are more successful than that in the rural areas. [3]  
Do you agree? Justify with **THREE** reasons.

c) Why are exotic breed of animals preferred over local breed by Bhutanese farmers? [6]  
Explain giving **SIX** points.


**Question 5**

a) The seeds used by farmers without the formal involvement of a government organization is called [1]  
A foundation seed.  
B informal seed.  
C formal seed.  
D breed seed.

b) A farmer has sown 400 pea seeds in his garden. After about a week, he found only 20% had germinated. How many seeds have not germinated? [3]


c) Name any **TWO** non-wood forest products.

[1]

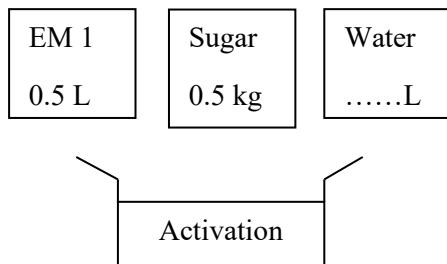

d) How is growing crops for seeds different from growing crops for consumption?  
Give any **FIVE** differences.

[5]

For Seeds	For consumption

## Question 6

a) The diagram given below depicts the process of EM activation. [1]



The quantity of water required for the activation is

- A 100 L.
- B 75 L.
- C 50 L.
- D 25 L.

b) Describe THREE roles of mulching. [3]

c) In an attempt to become a fully organic country, the Agriculture Ministry has initiated the concept of organic model village. Do you think that developing such a model would bring the country closer to becoming an organic nation? Support your answer with **THREE** justifications. [6]

## Question 7

a) Nitrogen is an important primary element required by plants. This element can be introduced in the soil by adding urea and sulphate. The other way to fix is by

- A adding single super phosphate.
- B adding muriate of potash.
- C planting potatoes.
- D planting peas.

b) List down any **THREE** supports provided by the Ministry of Agriculture and Forest to promote horticulture business in Bhutan. [3]

c) With the change in the mindset of the general public, flower growing culture is now appreciated. However, only small number of people are engaged in the business of flowers and ornamental plants. How would you encourage farmers to take up floriculture as a lucrative business? Suggest **SIX** different strategies.

[6]

## Question 8

a) Read the following: [1]

- I provide good air circulation among logs
- II direct sunlight on the bark
- III keep barks dry while maintaining high log moisture content
- IV lower sugar content

Which of the following is the prevention of trichoderma in shiitake mushroom?

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

b) Dechen is interested to start a log mushroom cultivation project at home. She collects some basic information for the project feasibility. A section of her questionnaire is given below.

(iii) Preference of log mushroom by people.

Very high  High  Low  Very low

(iv) Do you think wood logs are available locally?

Yes  No

(v) Name some trees used for wood log that are available in the region.

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.....  
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i. As a literate farmer, how can you help her answer question (v) giving **FOUR** [2] examples.



ii. Define sustainable agriculture.

[1]


c) The common practice of collecting leaf litters and unwanted twigs by the farmers for production of manure has affected the growth of mushrooms. Suggest **SIX** measures to make it sustainable.

[6]


### Question 9

a) A forest is located at an altitude of 1500 metres to 3200 metres in the region of Haa, Paro and Thimphu. A mixture of conifer and broadleaf trees are found in this region. [1]  
The above statement best describes  
A Mixed conifer forest.  
B Blue pine forest.  
C Broadleaf forest.  
D Fir forest.

b) Is community forestry better than agro-forestry? Justify giving **THREE** points. [3]

c) Community forest was introduced with an aim to encourage communities to conserve forest and generate income for the villagers. How has it benefitted the villagers. Explain with **SIX** reasons. [6]


**Question 10**

a) Where is the Agriculture Machinery Centre (AMC) located? [1]

A Bajo, Wangdue Phodrang  
B Khangma, Trashigang  
C Bhur, Sarpang  
D Bondey, Paro

b)  
i. State **ONE** advantage of intercropping. [1]


ii. Write the processes for preparing liquid manure using Artemisia plant. [2]



c) The use of right system project aims to encourage youth to take up commercial farming and enhance productivity in the rural areas. Mention **SIX** benefits the youth would receive through this project. [6]









