

*Answer **ALL** questions (Compulsory)*

Question 1.

a) 'Bhutan falls under one of the ten global hotspots'.
The above statement refers to

[1]

- A rarity.
- B endemism.
- C biodiversity.
- D critically endangered species.

Answer:.....

b) Study the table given below showing land use type.

Land use type	2010 (sq.km)	2015 (sq.km)
Forest	2840.9	3010
Shrubs	4015	4500.5
Cultivated agriculture land use	3146	1125
Degraded area	954	206.3

i) Write your observation with reference to the cultivated agriculture land use.

[1]

ii) Give **TWO** reasons for the above observation.

[2]

c) 'Sustainability in agriculture is affected by the changing environment'.

Do you agree? Justify and explain with **THREE** reasons.

[6]

Question 2.

a)

[1]

- I Zero at poles
- II Zero at Equator
- III Maximum at poles
- IV Maximum at Equator

The best combination of Carioles force is

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

Answer:.....

b) Karma plans to sow seeds in his plain rain fed field. You as the Gewog extension officer learnt through the daily weather forecast that heavy rainfall is likely to pour within few days.

i) What are your **TWO** suggestions to Karma? [2]

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

ii) Explain how above suggestions will help Karma. [1]

.....
.....
.....
.....

c) Write **SIX** differences between artificial and convectional rain.

[6]

Question 3.

a) What causes Down's Syndrome?

[1]

- A An extra X-chromosome
- B An extra Y-chromosome
- C An extra 21st chromosome
- D A recessive gene in the X-chromosome

Answer:.....

bi) Mention **TWO** important objectives of animal breeding.

[1]

ii) What are the purposes of crossing two plants in conventional breeding.

Support it with an example.

[2]

BHSEC/46/2016
© Copyright Reserved

Page 7 of 32

c) What are your opinions on the benefits and risk of development in the field of biotechnology. Explain **THREE** benefits and **THREE** risks. [6]

Question 4.

a) The breeding policy pursued in Bhutan is [1]

- A grading up.
- B line breeding.
- C pure breeding.
- D species hybridisation.

Answer:.....

b) Your family owns a dairy farm. What **THREE** measures would you adopt to improve the quality and quantity of milk production? [3]

c) Do you think dairy farming is economical and viable in Bhutan?
Justify with **THREE** reasons.

[6]

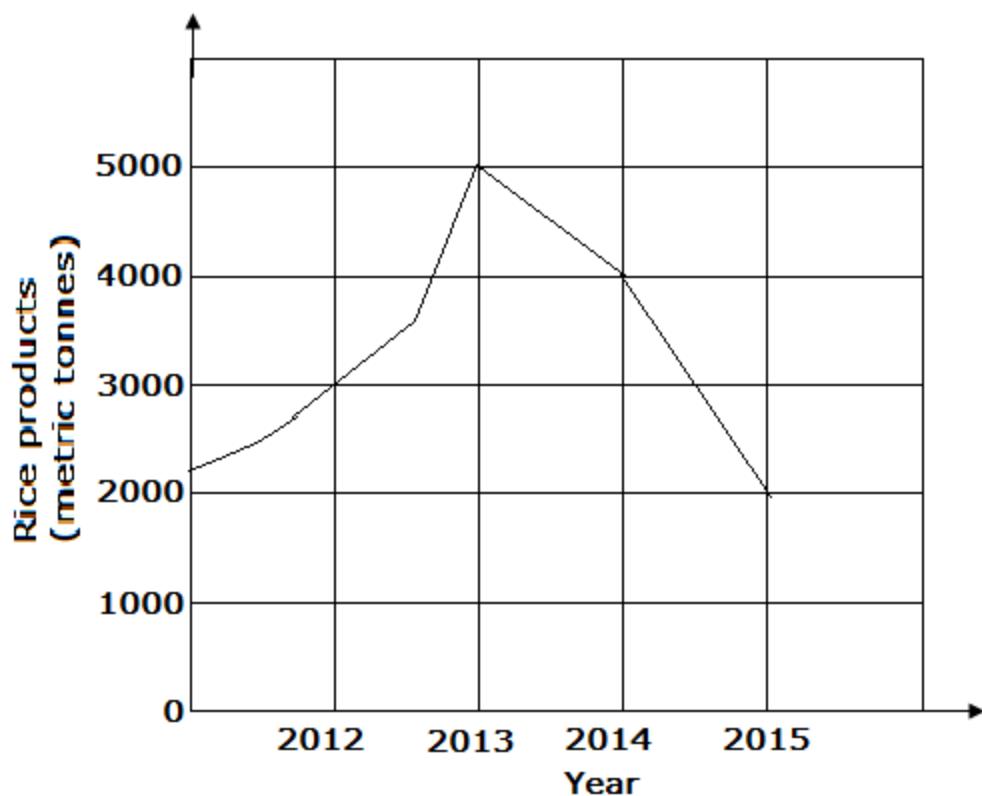
Question 5.

a) A class of seed which is the progeny of breeder's seed and handled to maintain the highest standard of genetic identity and purity is called [1]

A certified seed.
B breeder's seed.
C registered seed.
D foundation seed.

Answer:.....

bi) Use the graph below to answer the question that follows.



The agricultural product for Pema's rice field increased for a certain number of years. Suddenly she found that there is a drop in rice yield. How much metric tons of rice has decreased from 2013 to 2015? [1]

.....

.....

.....

.....

bii) Do you think vegetative propagation is more advantageous than sexual reproduction? Support your view with **TWO** reasons.

[2]

c) “Vegetable production in the country gradually increased after the country faced rupee shortage in 2012. Between 2008 and 2012, total vegetable production saw an increase of 13%. In 2013, the country produced 46,468 metric tons of vegetables. Production is expected to increase by more than 2000 metric tons in 2014”.

(Kuensel : May 16,2015)

i) The import of vegetables did not decrease, even when the production in the country increased. Why? Give **TWO** reasons. [2]

ii) Mention **TWO** suggestions to overcome the above mentioned problems. [2]

iii) Explain how the suggestions given in c (ii) can be achieved. [2]

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

Question 6.

a) “Organic agriculture should be managed in a precautionary and responsible manner to protect the health and well being of current and future generations and the environment”.

The above statement refers to the

[1]

- A principle of care.
- B principle of health.
- C principle of ecology.
- D principle of fairness.

Answer:.....

b) State **THREE** methods to manage pests organically.

[3]

c) Practising organic agriculture on a national scale is both beneficial and challenging. Write down **THREE** benefits and **THREE** challenges.

[6]

Question 7.

a) Which plant has the symbiotic micro-organism in their root nodules that is involved in nitrogen cycle? [1]

- A Pea
- B Ginger
- C Potato
- D Mustard

Answer:.....

bi) Define pruning.

[1]

bii) Study the following table:

Commodity	Production (MT)	Export (Nu million)	Import (Nu million)	Trade balance
Potato	50,390	326	61	26
Citrus	33,469	453	8	44
Friuts & Nuts	23,139	88	72	16
Vegetables	46,468	36	227	-19
MAPS	4918	444	1	44
Total		1,347	369	111

What could be the **TWO** possible causes for the negative trade balance for vegetables in the above table ?

[2]

c) Study the table and answer the questions.

Fertilizer(kg)	K ₂ O(%)	N(%)	P ₂ O ₅ (%)
P	0	0	10
Q	20	20	20
R	35	0	0
S	0	15	0

i) Identify **ONE** simple and **ONE** compound fertilizer from the table and give **ONE** example each.

[2]

ii) Which fertilizer from the list is beneficial? Why?

[2]

iii) Which fertilizer would you choose to use in a field after cultivation of potatoes? Why?

[2]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Question 8.

a) The wood logs for mushroom cultivation are kept under a roof or shade to

[1]

- A avoid drying of logs.
- B avoid decaying of logs.
- C promote drying of logs.
- D promote decaying of logs.

Answer:.....

b) i) Give **TWO** examples of farmer innovations in Bhutan.

[1]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

ii) ‘Tiny dark spot in cracks of logs develop into hard brick to black mold causing the barks to fall off’. What steps you would take to prevent the above problem?

[2]

c) Is mushroom cultivation a lucrative business in Bhutan?

Give **THREE** reasons to support your answer.

[6]

.....
.....
.....
.....
.....
.....

Question 9.

a) 'Forest forms the basis of a variety of industrial products like timbers and non-timbers to satisfy human basic needs'.

The above statements talks about

[1]

- A ecosystem services.
- B economical services.
- C recreational services.
- D socio-cultural services.

Answer:.....

bi) List **TWO** alternative sources of energy other than firewood.

[1]

.....
.....
.....
.....
.....
.....
.....
.....
.....

ii) You are invited as a Chief Guest in one of the school events at Gasa Primary School. Prepare a speech to be delivered based on one of the following topics.

[2]

- a. Forest services
- b. Forest management

ci) Explain **TWO** main objectives of forest nursery.

[2]

ii) Discuss how forest management helps in carbon trading.

[4]

.....
.....
.....
.....
.....

Question 10.

a) The centre responsible for conducting research on the farm equipments, tools and implementations is [1]

- A National seed center.
- B National Post-Harvest centre.
- C Research development centre.
- D Agriculture machinery centre.

Answer:.....

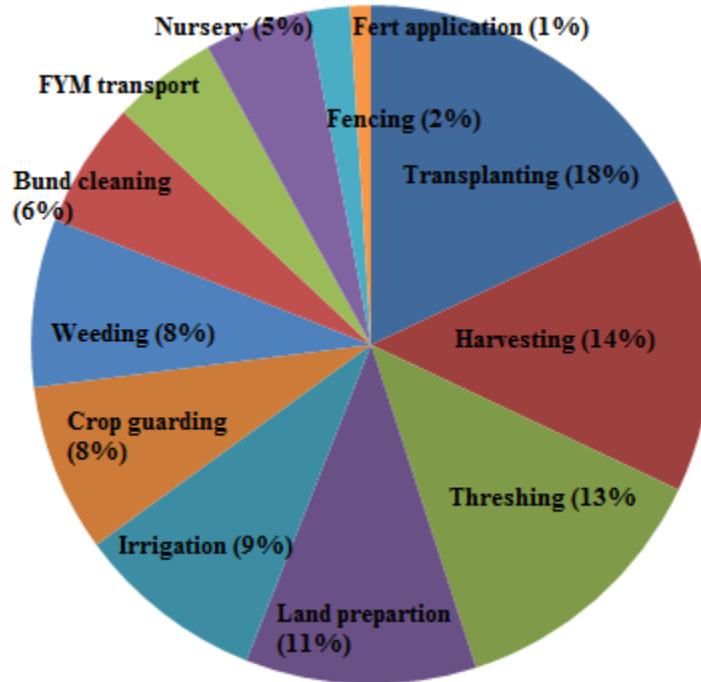
bi) Explain mulching with **ONE** function.

[2]

ii) You are one of the foresters in an area where land degradation is very acute and severe. Develop **TWO** important measures to overcome the above problem.

[1]

c) The chart given below shows that transplanting takes the maximum labour share followed by harvesting during the process of rice cultivation in Bhutan.



i) Why is labour share higher for planting and harvesting? Give **TWO** reasons. [2]

ii) Will the supply of power tillers to all the farmers be useful?
Support with **FOUR** reasons.

[4]

