

**ROYAL CIVIL SERVICE COMMISSION  
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2010  
EXAMINATION CATEGORY: TECHNICAL**

**PAPER III: SUBJECT SPECIALIZATION PAPER FOR AGRICULTURE**

<b>Date</b>	<b>: 24<sup>th</sup> November 2010</b>
<b>Total Marks</b>	<b>: 100</b>
<b>Examination Time</b>	<b>: 2.5 Hours</b>
<b>Reading Time</b>	<b>: 15 Minutes</b>

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**INSTRUCTIONS**

1. Write your Roll Number clearly on the answer booklet in the space provided
2. The first 15 minutes is being provided to check the numbers of pages, printing errors, clarify doubts and to read the instructions. You are **NOT PERMITTED TO WRITE** during this time.
3. Use either Blue or Black ink pen or ball point pen for written part and **H.B. Pencils** for the sketches and drawings.
4. All answers should be written on the Answer Booklet provided. Candidates are not allowed to write anything on the question paper.
5. This Question Booklet consists of eight pages including this page and no pages shall be removed or torn. Any pages found missing should be reported to the invigilators within the first 15 minutes of receipt of the question book.
6. It is divided into two sections – namely **SECTION A** and **SECTION B** as detailed in the following para(s) 7 and 8
7. **SECTION A** consists of two parts, Part I and Part II.  
**Part I** consists of 30 multiple choice questions carrying one (1) mark each and is **compulsory**. The answer of your choice should be clearly written in whole along with the question and option number on your answer booklet.  
**Part II** consists of four (4) short answer questions of five (5) marks each and all questions are compulsory.
8. **SECTION B** consists of two **Case Studies**, Choose only **ONE** case study and answer the questions under your choice. Each case study carries fifty (50) marks in total.

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**PAPER III: SUBJECT SPECIALIZATION PAPER FOR AGRICULTURE**

**Time allotted: 2.5 Hours; Total Marks: 100**

**Section A:**

**Part I : 30 multiple choice questions of one mark each (total marks: 30)**

1. Which is not basic principle of Agronomy ?
  - a) To select appropriate materials for seed & sowing
  - b) Management of soil and climate
  - c) Appropriate intercropping activities management for crop
  - d) Livestock management for Agriculture
  
2. The most common disease of Potato crop in Bhutan is:
  - a) Blast
  - b) Blight
  - c) Nematodes
  - d) Tuber root
  
3. How much radiation energy percentage radiating on plant used in photosynthesis?
  - a) 0.50% - 2.10%
  - b) 0.42%-1.66%
  - c) 0.25%-0.30%
  - d) 0.16%-0.24%
  
4. Which of the following elements play an important role in nitrogen metabolism?
  - a) Iron
  - b) Molybdenum
  - c) Manganese
  - d) Magnesium

5. The X and Y chromosomes in humans are called:
- a) multiple alleles.
  - b) polygenic traits.
  - c) sex chromosomes.
  - d) co-dominance.
6. Which one of the following can be assessed by using the equation  
 $A = \text{Economic Production} / \text{Biomass production}$
- a) Panicle emergence rate
  - b) Rate of flowering
  - c) Harvest Index
  - d) Leaf production rate
7. Effective cause of atmospheric pressure is not
- a) temperature
  - b) altitude from the sea level
  - c) rotation of earth
  - d) soil erosion
8. Which pair of chromosomes would produce a male offspring?
- a) XX
  - b) XY
  - c) XO
  - d) AB
9. The Cooperative Act of Bhutan 2001 was amended in which of the following year
- a) 2010
  - b) 2005
  - c) 2007
  - d) 2009
10. Genetics is:
- a) a study of pea plants
  - b) a study of heredity
  - c) a phenotype of an organism
  - d) a characteristic that can be passed on

11. Who among the following is the current Minister incharge of the Ministry of Agriculture and Forests?

- a) Lyonpo Pema Gyeltshen
- b) Lyonpo Pema Gyamtsho
- c) Lyonpo Pema Gyatsho
- d) Lyonpo Pemba Gyamtsho

12. Which one of the following does not cause soil erosion?

- a) Monoculture and the use of fertilizer
- b) Contour ploughing
- c) Removal of hedgerows
- d) Overgrazing by animals

13. During his experiments, Mendel found that:

- a) all traits do not blend
- b) in the first generation all of the offspring showed the dominant trait.
- c) in the second generation the ratio of purple flowers to white flowers was 3:1.
- d) All of the above

14. The headquarter of Food and Agriculture Organisation (FAO) of UN is located in one of the following countries. Choose the correct one.

- a) USA
- b) Japan
- c) Italy
- d) Philippines

15. Rice is the staple food of Bhutan. Which one of the following ranges contain the per capita rice consumption of Bhutan

- a) 100 – 150 kg/year
- b) 150 – 200 kg/year
- c) 200 – 250 kg/year
- d) 250 – 300 kg/year

16. How does the moisture stress affect the cell?

- a) Affect cell division
- b) Affect cell expansion
- c) Cell mortality rate is affected
- d) No effect on cell

17. Oranges from Bhutan are exported to:

- a) Pakistan and India
- b) India and Nepal
- c) India & Bangladesh
- d) India and Sri Lanka

18. Which is not correct in the following

- a) X-rays and Gamma rays— 9% of energy
- b) Visible lighting rays — 41% of energy
- c) Infrared rays — 50% of energy
- d) Ultraviolet rays — 10% of energy

19. What percentage of Bhutan's area is under agriculture?

- a) 12.8 %
- b) 7.8 %
- c) 20 .0%
- d) 15.3 %

20. A characteristic that an organism can pass on to its offspring is called a:

- a) phenotype
- b) trait
- c) genotype
- d) gene

21. Which among the following is the number one export crop of Bhutan?

- a) Potato
- b) Apple
- c) Cardamom
- d) Orange

22. Most valuable Non Timber Forest Product (NTFP) of Bhutan:

- a) Cordycep
- b) Chitata
- c) Pipla
- d) Star anises

23. Which of the following is the least likely reason for using tillage in seedbed preparation?

- A )Improvement of the physical condition of the soil
- b) Incorporation of crop and weed residues
- c) Elimination of weeds
- d) Change of soil texture

24. Major nutrients required by crops are:

- a) Nitrogen, Zinc and Calcium
- b) Phosphorus, Zinc & Boron
- c) Nitrogen, Phosphorus & Potassium
- d) Potassium, Boron & Nitrogen

25. What percent of Bhutanese population is depended on agriculture?

- a) 79 %
- b) 59 %
- c) 69 %
- d) 65 %

26. Demand for which of the following product is likely to be the most elastic?

- a) Milk
- b) Salt
- c) Pork
- d) Sugar

27. Which is not an inorganic matter ?

- a) Magnesium
- b) Iron
- c) Fat
- d) Iodine

28. .Where and when was World meteorological Organization established ?

- a) Washington — 1978
- b) Rome — 1976
- c) Geneva— 1978
- d) New York — 1980

29. The important crop in Bhutan with scientific name *Pyrus malus* is commonly known as

- a) Coffee
- b) Apple
- c) Banana
- d) Sorghum

30. Who propounded the theory of Natural Selection?

- a) Darwin
- b) Lamarck
- c) Linnaeus
- d) Wallace

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## Section A

**Part II: Four short questions of 5 marks each. Answer all the four questions. Write your answers in the answer book provided.**

1. The demand for which of the following product is likely to be the most elastic and why ?

- a) Milk
- b) Salt,
- c) Pork
- d) Sugar.

2. Which of the following is the most probable long term effect of import trade barriers on domestic prices and production and why ?

- a) Both prices and production decrease
- b) Both prices and production increase
- c) Price decrease, production increase
- d) Price increase, production decrease

3. What is soil degradation ?

4. What are the advantages of genetically engineered crops?

**Section B: Attempt only one of the following two case studies. Use answer books provided to write your answers. (Total marks: 50)**

### **Case study 1**

We know that the Royal Government accorded high priority to agriculture development and adopted a policy approach to attain food self sufficiency and food security in all the past Five Year Plans. Though the GDP contribution of Agriculture has decreased from 40 % in 1990 to 19 % as of 2007, it is still the highest contribution from a single sector.

However given the following four facts, do you think Bhutan should continue to pursue agriculture development in the same high spirit as today **Or** Should Bhutan move away from the dominantly agriculture sector based development approach to a non agriculture sector based approach. Please justify your choice.

**The facts:**

- i) Bhutan has only 7.8 % of its total land suitable for agriculture,
- ii) Agriculture sector provides employment to 67 % of the population
- iii) Increasing pressure on arable land from urbanization and other development works
- iv) The inevitable onslaught of the globalization

**OR**

### **Case study 2**

In 2009, some important institutional changes has taken place in the Ministry of Agriculture including the renaming of the Ministry as the “Ministry of Agriculture and Forests” and the establishment of a new department to look after the agricultural marketing and cooperatives.

In your opinion what triggered these changes. And also give your views with reasons if you agree or disagree with these changes.