

**ROYAL CIVIL SERVICE COMMISSION
TECHNICAL GRADUATES SELECTION EXAMINATION: 2007**

Paper III: Subject Specialization (Agriculture) Friday 16 November 2007

Registration No:

Time allowed: **150 Minutes**

Total Marks: **100**

Please read the following instructions carefully.

1. General instructions:

- 1.1 Under the provision of the Technical Graduates Selection Examination procedures of the Royal Civil Service Commission, candidates shall write their **Roll No.** only on the Question-Cum-Answer Book in the space provided.
- 1.2 No other particulars that would indicate the identity of a candidate shall be written on this book. Any candidate found guilty of writing their particulars or making any identifications marks on and/or in this book shall be disqualified from consideration of future employment by the RCSC.
- 1.3 This book is the property of the RCSC and shall not be removed from the examination hall. It consists of 7 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.
- 1.4 Candidates shall not be allowed to carry any papers inside the examination hall.
- 1.5 Candidates shall be required to produce the Admission Card while entering the examination hall and when demanded by the concerned authorities.

2. Specific instructions:

- 2.1 Do not write anything during the first 15 minutes. This time is to be spent in reading the instructions, the questions and to make sure that no pages are missing.
- 2.2 Any misprint/clarification in the questions must be raised during the first 15 minutes.
- 2.3 Once the examination begins, you will not be allowed to ask questions or leave the examination hall.
- 2.4 There are 30 multiple choice questions of one mark each and 4 short answers questions of five marks each. All questions are compulsory.
- 2.5 There are two case studies, out of which you will have to attempt only one. The case study carries 50% of the total marks.

Paper III: Subject Specialization: Agriculture
Time allotted: 150 minutes; Total Marks: 100

Section A1: 30 multiple choice questions of one mark each (total marks: 30)

Tick the correct answer

1. The three main cash crops grown in Bhutan are:
a) Potato, mandarin & apple b) Potato, apple & chilli c) Rice, maize & potato
d) Mandarin, chilli & apple
2. Crop rotation in agriculture is practiced mainly:
a) For diversification b) For soil fertility c) To avoid pests d) None of the above
3. Disease transmission in crops can occur through:
a) Insect vectors b) Soil c) Water d) All of the above
4. Which one of the following is the odd one and least likely to belong to the group:
a) Parasite b) Predators c) Wee d) Parasitoids
5. Integrated pest management means:
a) Not using pesticides b) Use of pesticides c) Judicious use of pesticides d) None of the above
6. Use of living organisms to control insect pests and diseases in crops is known as:
a) Mechanical control b) Biological control c) Physical control
d) Chemical control
7. Major soil nutrients required by crops are:
a) Nitrogen, Zinc & Calcium b) Phosphorus, Zinc & Boron c) Nitrogen, Phosphorus & Potassium
d) Potassium, Boron and Nitrogen
8. Greenhouses are used in agriculture to:
a) Modify environmental factors b) Minimize injury from plant pests and diseases c) Prevent damage from wind
d) All of these
9. Looking at our agricultural system, Bhutan would be in a best position to initiate organic farming in :
a) All crops b) Vegetables c) Cereals d) Selected crops
10. In which type of soil are nutrients most likely to leach:
a) Sandy soil b) Clay soil c) Loamy soil d) Silt soil

11. There are four regional research centres in Bhutan designated with specific research mandates. The research centre in Yusipang is the focal centre for research in:
a) Horticulture b) Cereals c) Forest d) Livestock
12. A green manure supplies the soil with:
a) Organic matter b) Additional nitrogen c) Improved texture d) All of these
13. Organic agriculture is:
a) Safer for the environment b) Costs less for the produce c) Yields higher d) All of these
14. Indiscriminate use of pesticides in agriculture can cause:
a) Pest resistance b) Pest resurgence c) Environmental pollution d) All of these
15. The most determinant factor in agriculture production is:
a) Temperature b) Humidity c) Climate d) Water vapor
16. Genetically modified crops possess characteristics like:
a) Improved resistance to plant pests b) Reduced maturation time c) Increased nutrients, yields, and stress tolerance d) All of the above
17. Nitrogen in the soil can be fixed by growing:
a) Rice b) Maize c) Cabbage d) Beans
18. Farm mechanization in Bhutan is difficult because of:
a) Unavailable equipments/machines b) Attitude of farmers c) Land terrain d) None of these
19. The successful establishment of an introduced foreign pest into an area would depend on:
a) Availability of host plant b) Suitability of the environment c) Both d) None of these
20. Agro-ecological zones are demarcated based on:
a) Temperature b) Rainfall c) Altitude d) All of these
21. There are many ways in which exotic pests can be introduced but the most important one is through:
a) Packing materials b) Soil c) Seeds and other propagating materials d) Fruits
22. Pesticides come in different formulations and one such formulation is the Emulsifiable concentrates (EC) which is in the form of:
a) Dust b) Liquid c) Granule d) Wettable powder
23. Pesticides derived from natural materials such as animals, plants and bacteria are called:
a) Bio-pesticides b) Nematicides c) Acaricides c) Fungicides
24. The basic difference between organic farming and genetically modified organisms (GMO) is in the field of:
a) Genetic engineering b) Pesticide usage c) Fertilizer usage d) All of these

25. Organic farming relies on the use and promotion of:
a) Healthy crops b) Developing biological diversity c) Botanical or non-synthetic pesticides
d) All of these
26. Like all new technologies, genetically modified organisms also pose certain risks like:
a) Over production b) Unknown effects on human health and environment c) Increased
resistance d) None of these.
27. Some areas of challenges for agriculture in the 21st century may be solved by:
a) Global warming b) Improvement in soil fertility c) Genetically modified organism d)
None of these
28. Rice cultivation in Bumthang may not be viable because of:
a) Pest and disease prevalence b) Lack of proper cold tolerant varieties c) Lack of irrigation
facilities d) None of these
29. Apples from Bhutan are exported to:
a) India b) Bangladesh c) Sri Lanka d) India & Bangladesh
30. Few years ago there was an outbreak of rice disease in Bhutan. This disease in rice can
occur on an epidemic scale and needs to be monitored every year. This disease is:
a) Blight b) Blast c) Root rot d) Rust

Section A2: Four short answer questions of 5 marks each (total marks: 20)

1. What is plant breeding and explain its relevance to agriculture in Bhutan?

2. What is Plant quarantine and does Bhutan need to have an efficient quarantine system in place and why?

3. What in your opinion are some of the basic requirements for a crop to grow well in an area and besides meeting these requirements what other factors need to be assessed for promoting the cultivation of the particular crop?

4. Discuss the methodology and the technical requirements to lay out a simple field trial to evaluate the yield of 3 rice varieties?

Section B: Attempt only one of the case studies. Use pages 7, 8 and 9 as answer sheets and you can use both sides of the pages if required. (Total marks: 50)

Case study: 1

Integrated Pest Management (IPM) as well as organic farming is both being promoted in Bhutan. Which in your opinion would be best suited for Bhutan and why? How would you go about to implement and monitor the program that you think would suit Bhutan the best? Elaborate and support your answer with examples and justifications?

OR

Case study: 2

Agriculture in Bhutan has often been criticized for its slow growth and little or no impact on our local farmers. Few of the reasons given for this are said to be due to a weak agricultural extension system, weak linkages between research and extension and weak monitoring system. What in your opinion are factors contributing to a weak extension system? What and how would you go about to improve the system? Submit a proposal highlighting your strategies/plans for developing an effective extension system in Bhutan?