

ROYAL CIVIL SERVICE COMMISSION
TECHNICAL GRADUATES SELECTION EXAMINATION: 2007

Paper II: General subject knowledge (Agriculture, Horticulture, Forestry & Environmental sciences) Thursday 15 November 2007

Registration No:

Time allowed: 90 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 70 multiple choice questions of one mark each and 10 short answers questions of three marks each. All questions are compulsory.

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Part A: 70 multiple choice questions of one mark each (total marks: 70).

Tick the correct answer

1. The reproductive part of a female flower is called the:
a) Stamen b) Carpel c) Sepal d) Petal
2. Charles Darwin is well known for his theory on:
a) Anthropology b) Solar system c) Ecology d) Evolution
3. Evaporation of water from the aerial parts of plants like the stomata is known as:
a) Transpiration b) Respiration c) Osmosis d) Evaporation
4. Roots of plants function to:
a) Absorb water/minerals from soil b) Provide anchorage/support c) Store food for the plant
d) All of these
5. The primary component of natural gas found in oil fields and coal beds is:
a) Ethane b) Methane c) Propane d) Nitrogen
6. The smallest and the basic unit of life is:
a) Chromosome b) Nucleus c) Cell d) Tissue
7. Acid rain is caused by human activities through emission of sulfur and nitrogen and is characterized by having:
a) Higher PH of more than 7 b) Low PH below 4 c) Neutral PH d) None of the above
8. Vehicles cause environmental pollution through emission of:
a) CO₂ b) NO₂ c) Smoke d) All of these
9. Burning of fossil fuels leads to higher concentration of:
a) O₂ b) CO₂ c) NO₂ d) H₂O
10. Water vapor, carbon dioxide, chlorofluorocarbons and nitrous oxide are known as:
a) Natural gases b) Greenhouse gases c) Fossil fuels d) None of these

11. Increased concentration of greenhouse gases in the atmosphere can cause the earth's temperature to:
a) Increase b) Decrease c) Remain the same
12. Biodiversity refers to:
a) All aspects of variety in the living world b) Single species of plant or animal c) Different species of insects d) Diversity of plants only
13. Apart from optimum temperature and water, what is the other requirement for a seed to germinate:
a) Oxygen b) Carbon dioxide c) Nitrous oxide d) Carbon monoxide
14. Through the process of photosynthesis, plants produce:
a) Glucose + waste oxygen b) Glucose + water c) Glucose + carbon dioxide d) Oxygen + water
15. Resources that can be replenished by reproduction or recycling are called:
a) Non-renewable b) Renewable c) Natural d) None of these
16. A common item in everyday use that can be recycled is:
a) Plastic b) Fabric c) Paper d) None of these
17. Blood clotting in humans is caused by:
a) WBC b) RBC c) Platelets d) Haemoglobin
18. Plant hormones influence the growth of plants and are actually:
a) Nutrients b) Chemicals c) Water d) None of these
19. Most farmers in Bhutan practice:
a) Mixed cropping b) Mixed cropping with livestock rearing c) Livestock rearing only d) None of these.
20. Integrated pest management relies on the use of:
a) Resistant varieties b) Biological control c) Mechanical control d) Combination of these methods.
21. Biological control is the use of:
a) Predators b) Parasites c) Parasitoids d) Any one of these
22. The process of carbon trading is:
a) Buying and selling of coal b) Carbon emitters sell carbon credits c) Carbon emitters buy carbon credits d) None of these
23. The greenhouse gas that is used in refrigerators is:
a) Ozone b) Fluorine c) Chlorofluorocarbons d) Nitrogen

24. Major composition of air constituting more than 99% is:
a) Nitrogen & oxygen b) Carbon dioxide & oxygen c) Hydrogen & oxygen d) Nitrogen & carbon dioxide.
25. Oxygen from the air is carried to the body organs through:
a) Haemoglobin b) WBC c) Platelets d) All of these
26. Malaria which is spread by a mosquito vector is actually a:
a) Arthropod b) Protozoa c) Worm d) Nematode
27. The main function of the root hair is to:
a) Store food b) Increase the area of absorption c) Anchor the plant d) All of these
28. Avian flu commonly known as bird flu is caused by a:
a) Virus b) Bacteria c) Fungus d) Nematode
29. Avian flu has globally become important because the disease:
a) Is contagious to animals b) Can infect humans c) Might change into a form that is highly infectious to humans d) All of these.
30. Dengue fever is caused by a virus which is spread by:
a) Aedes mosquito b) Anopheles mosquito c) Person to person contact d) All of these.
31. The conversion of light energy into chemical energy by living organisms like plants is called:
a) Respiration b) Transpiration c) Photosynthesis d) Oxidation.
32. The release of energy from glucose or other organic chemical is known as:
a) Respiration b) Photosynthesis c) Transpiration d) None of these
33. Respiration without use of oxygen is called:
a) Aerobic respiration b) Anaerobic respiration c) Cellular respiration d) All of these
34. Plants that have flowers and seeds enclosed in fruits are:
a) Gymnosperms b) Angiosperms c) Bryophytes c) None of these
35. Pollination of flowers can take place through:
a) Insects b) Man c) Wind d) All of these
36. Self fertilization in a flower is known as:
a) Allogamy b) Autogamy c) Allautogamy d) None of these
37. Sodium, magnesium and calcium belong to the group of:
a) Non-metals b) Metals c) Gases d) None of these.
38. Fossil fuels like coal, oil and natural gases are:
a) Renewable b) Non renewable c) Can be made renewable d) None of these

39. Deforestation can lead to higher concentrations of:
a) Oxygen b) Nitrogen c) Carbon dioxide d) Water
40. Water vapor from plants is lost through the stomata on the leaves. What would happen to the rate of transpiration if you spray silicon emulsion on the leaves:
a) Increase b) Decrease c) Remain the same d) None of the above
41. Some of the examples of micro soil nutrients are:
a) Zinc, boron and calcium b) Phosphorus, boron and zinc c) Potassium, calcium and zinc
d) Nitrogen, phosphorus and potassium.
42. Nitrogen in the soil can be fixed through:
a) Keeping land fallow b) Planting legumes c) Crop rotation d) None of these
43. Crops in which genes have been engineered to provide favorable characteristics are called:
a) Organic crops b) GMO crops c) Natural crops d) Synthetic crops
44. The most important factor that would determine the diversification of crops would be the:
a) Climate b) Temperature c) Rainfall d) Humidity
45. Disease transmission in plants can take place through:
a) Insect vectors b) Soil b) Water d) All of these
46. Pesticides are used to control:
a) Insects b) Diseases c) Weeds d) All of these
47. Herbicides are used to control:
a) Insects b) Nematodes c) Fungus d) Weeds
48. The type of soil in which nutrients are most likely to leach is:
a) Loamy soil b) Clay soil c) Sandy soil d) Silt soil
49. The existing forest cover in Bhutan is:
a) Less than 50% b) More than 50% c) More than 64% d) Less than 60%
50. Bhutan could generate additional income in future through selling:
a) Timber b) Carbon credits d) Furniture d) None of these
51. One of the major sources of pollution in Bhutan is due to:
a) Industrial emissions b) Vehicle emissions c) Deforestation d) None of these
52. One of the most valuable non-wood forest products in Bhutan is:
a) Mushrooms b) Cordyceps c) Orchids d) None of these
53. The most preferred staple food crop in Bhutan is:
a) Maize c) Rice c) Wheat d) Millet

54. The biodiversity act 2003 of Bhutan was enacted to:
a) Ensure conservation and sustainable use of our genetic resources b) Allow unregulated access to genetic resources c) Prevent access to genetic resources d) All of these.
55. In the area of forestry, Bhutan places high priority on:
a) Conservation b) Commercialization of forest products c) Harvesting of non wood forest products d) All of these
56. Horticulture program in Bhutan would best benefit from promoting:
a) High value low volume cash crops b) Diversification c) Integrated pest and nutrient management d) All of these
57. Agro-ecological zones are useful as they provide information on:
a) Temperature b) Rainfall c) Altitude d) All of these
58. Global warming over the last few decades has shown a temperature increase of:
a) More than 5 degrees Celsius b) Less than 5 degrees Celsius c) 2-3 degrees Celsius d) Less than 1 degree Celsius
59. Plants undergo modification to perform special functions and these modified parts are:
a) Bulbs b) Thorns c) Leaf hairs d) All of these
60. Spiders are arthropods and play an important role in agriculture as:
a) Prey b) Predators c) Parasites d) None of these
61. Pesticides should not be sprayed during flowering time as it may:
a) Cause flower toxicity b) Reduce pollination c) Cause poisoning d) All of these
62. Which vitamin is obtained directly from sunlight:
a) A b) B-complex c) D d) C
63. The best crop to pilot for organic farming in Bhutan would be:
a) Red rice b) Apple c) Medicinal plants d) Vegetables
64. Organic farming does not permit the usage of:
a) Synthetic pesticides and fertilizers b) Farmyard manure c) Bio-pesticides d) All of these
65. Potato tuber which comes in a variety of shapes and sizes is a:
a) Root b) Stem c) Bulb d) None of these
65. Prohibiting the movement of a certain commodity within the country to prevent the spread of unwanted organisms is called:
a) Post entry quarantine b) Internal quarantine c) Pre entry quarantine d) All of these
67. The green pigment in the leaves essential for photosynthesis is:
a) Chromosomes b) Chloroplasts c) Chlorophyll d) none of these

68. Plant breeding research is undertaken to select varieties which are:
a) High yielding b) Resistant to pests c) Enhanced taste and quality d) Any one of these
69. Globally the causes of deforestation are due:
a) Logging practices b) Shifting cultivation c) Expansion of agriculture d) All of these
70. An agricultural system in which plots of land are cultivated temporarily and then abandoned is known as:
a) Agro-forestry b) Integrated cultivation c) Shifting cultivation d) None of these

Part B: 10 short answer questions of 3 marks each (Total 30 marks). Attempt all questions

Write short notes on:

1. Biodiversity
2. Pollution
3. Potential of non-wood forest products in Bhutan
4. Description of a typical flower
5. Genetically modified organisms (GMO)
6. Carbon Trading
7. Global warming
8. Meteorology and its relevance to research
9. Pesticides
10. Agro-forestry