

ROYAL CIVIL SERVICE COMMISSION
CIVIL SERVICE COMMON EXAMINATION (CSCE) 2008
EXAMINATION CATEGORY : TECHNICAL

PAPER II: GENERAL SUBJECT KNOWLEDGE FOR BIO-SCIENCE GROUP

Date : 19 December 2008
Total Marks : 100
Examination Time : 1.5 hours
Reading Time : 10 minutes

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 Answer Sheet provided separately.
- 1.2 No other particulars that would indicate the identity of a candidate shall be written on the answer book. Any candidate found guilty of writing their particulars or making any identification marks on his/her answer sheet shall be disqualified from consideration of future employment by the RCSC.
- 1.3 The question paper consists of 12 pages and no pages shall be torn or removed. Any pages found missing should be reported to the invigilators within the first 15 minutes of receipt of the paper.
- 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/clarifications 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 3 marks each. All questions are compulsory.

**ROYAL CIVIL SERVICE COMMISSION
TECHNICAL GRADUATES SELECTION EXAMINATION 2008**

**Paper II: General Subject Knowledge (Agriculture, Horticulture, Animal Science
and Forestry)**

Time allotted: 90 minutes; Total Marks: 100

Part A: Multiple choice questions of one mark each (total 70 questions)

Copy the Question Number on your Answer Sheet and write the correct answer as a, b, c or d.

1. The diffusion of water molecules through a permeable membrane from a region of low solute concentration to a region of higher concentration is known as:
 - a. plasmolysis
 - b. osmosis
 - c. imbibition
 - d. absorption

2. Parasitism is an interaction between two species in which:
 - a. both species benefit
 - b. both species are harmed
 - c. only one species benefits
 - d. none of these

3. Light energy is converted into chemical energy during the process of:
 - a. photosynthesis
 - b. respiration
 - c. transpiration
 - d. none of these

4. The process of fusion of two dissimilar sexual reproductive units, called gametes, is called:
 - a. pollination
 - b. hybridization
 - c. reproduction
 - d. fertilization

5. Yellowing and shedding of old leaves in trees in winter is an example of:
 - a. chlorosis
 - b. senescence
 - c. hibernation
 - d. none of these

6. Which of these components of blood fight infection in animals:
 - a. sickle cells
 - b. platelets
 - c. white blood cells
 - d. all of these

7. Characterized by bleeding gums, pain in the muscles, general lethargy and fatigue, scurvy is a result of lack of Vitamin:
 - a. A
 - b. B
 - c. C
 - d. D

8. The mammalian heart is surrounded by a fibrous sac called:
 - a. heart membrane
 - b. pericardium
 - c. neocardium
 - d. none of these

9. Which of the following hormone is directly associated with pregnancy in animals:
 - a. insulin
 - b. testosterone
 - c. progesterone
 - d. thyroxine

10. A person suffering from diabetes mellitus drinks water more frequently to eliminate from the blood extra:
 - a. adrenalin
 - b. glucose
 - c. salts
 - d. insulin

11. Which of the following statements is true regarding the Eustachian tube:
 - a. equalizes pressure on both the ears
 - b. produces a ringing noise
 - c. collects and ejects dirt
 - d. all of the above

12. Metatarsal bones are found in:
 - a. spine
 - b. leg
 - c. skull
 - d. ribs

13. Muscle fatigue occurs due to the accumulation of:
 - a. glycogen

- b. lactic acid
 - c. carbon dioxide
 - d. none of these
14. The Galapagos Islands are located nearest the:
- a. west coast of South America
 - b. west coast of Eastern Africa
 - c. west coast of North America
 - d. west coast of Australia
15. The Continental Drift Theory helps to explain:
- a. patterns of plants and animal distribution
 - b. mass extinctions of plants and animals
 - c. distribution of fossils on earth
 - d. all of these
16. The Theory of Natural Selection was propounded by:
- a. Lamarck
 - b. Darwin
 - c. Linnaeus
 - d. Wallace
17. The movement of genes from one population to another as a result of interbreeding is known as:
- a. recombination
 - b. mutation
 - c. genetic drift
 - d. gene flow
18. The reproductive barrier that maintains species boundary between horses and donkeys is due to :
- a. hybrid sterility
 - b. mechanical isolation
 - c. species isolation
 - d. all of these
19. Gene mutation can occur due to the following:
- a. radiation
 - b. chemicals
 - c. temperature
 - d. all of these
20. Transgenic plants or animals have genes from:
- a. similar or related species
 - b. dissimilar or unrelated species
 - c. hybrid species

- d. none of the above
21. The first antibiotic discovered by Alexander Fleming was:
- tetracycline
 - streptomycin
 - penicillin
 - ampicillin
22. The method of producing new crop varieties in which two or more plants of unlike genetic makeup are crossed together is called:
- Selfing
 - hybridization
 - mass selection
 - heterosis
23. Maintaining biological diversity in the natural habitats or reserves is an example of:
- ex situ* conservation
 - in situ* conservation
 - integrated conservation
 - all of these
24. Legumes are an example of:
- biopesticide
 - biofertilizer
 - bio-control
 - none of these
25. Common approaches used in improving cattle breed in Bhutan are:
- Artificial Insemination
 - Supply of breeding bull
 - Introduction of breeds
 - All of the above
26. Human beings have 46 chromosomes. The rice plant has a chromosome number of:
- 18
 - 24
 - 36
 - 48
27. Rice grown in Bhutan is
- Oryza glaberrima*
 - Oryza sativa*
 - Oryza javanica*
 - Oryza rufipogon*

28. NPK are major nutrients for plant growth. Which is the macro-nutrient that is not limiting in Bhutan's soils?
- P
 - N
 - K
 - None of the above
29. Which of the following is an example of micro-nutrient:
- potassium
 - zinc
 - nitrogen
 - hydrogen
30. Which is the most popular labour saving equipment used by farmers for land preparation in Bhutan
- Bullock plough
 - Power tiller
 - Tractor
 - None of these
31. The total percent protected area in Bhutan, including national parks, biological corridors, sanctuaries and other protected area at present is approximately:
- 15% of the total forest area
 - 30% of the total land area
 - 50% of the total land area
 - 80% of the total land area
32. The Constitution of Bhutan pledges to maintain for all times to come a minimum forest cover of:
- 72% of the total land area
 - 65% of the total forest area
 - 60% of the total land area
 - 50% of the total forest area
33. Farmers could grow trees in their registered land for their use and surplus produce for the market. The type of forest raised in their own land is called:
- Community forest
 - Private forest
 - Social forest
 - Mixed forest
34. The total number of approved community forests in Bhutan till date is:
- 113
 - 213
 - 313
 - 413

35. The largest National Park of Bhutan is
- Sakten Wildlife Sanctuary
 - Thrumingla Wildlife Sanctuary
 - Jigme Dorji National Park
 - Wangchuk Centennial Park
36. Bhutan is known for its conservation efforts in the region. The number of National Parks in Bhutan is:
- 5
 - 10
 - 15
 - 20
37. Jigme Singye Wangchuck National Park, one of the protected areas of Bhutan, does not include this Dzongkhag:
- Trongsa
 - Sarpang
 - Tsirang
 - Paro
38. In Bhutan, Blue Poppy (*Meconopsis grandis*) and Red Panda (*Ailuurus fulgens*) are species which are:
- totally protected
 - partially protected
 - not at all protected
 - none of these
39. Living tissue that transports food from leaves to all other parts of the plant body is:
- Parenchyma
 - Phloem
 - Xylem
 - Collenchyma
40. The atomic structure has a positively charged particle called:
- Electron
 - Neutron
 - Nucleolide
 - Proton
41. The group of plants which are non-green due to lack of chlorophyll is known as:
- Algae
 - Bacteria
 - Fungi
 - Thalophytes

42. The Pea, Beans and Sunflower plants are examples of :
- Monocotyledonous plants
 - Dicotyledonous plants
 - Bryophytes
 - None of these
43. The roots of plants develop from:
- Root hairs
 - Plumule of embryo
 - Radicule of embryo
 - Root cap
44. The process of transfer of pollen grains to the stigma of a flower is known as:
- Fertilization
 - Fusion
 - Pollination
 - None of the above
45. Fruit is a matured:
- Pistil
 - Ovule
 - Ovary
 - Seed coat
46. The small pores on the surface of the plant leaves are called:
- Guard cells
 - Stomata
 - Pith
 - Stele
47. The energy-rich glucose molecules, produced through the process of photosynthesis, are stored in plants as:
- Glucose
 - Dextrose
 - Sugar
 - Starch
48. Respiration is a process in which energy stored as starch is released and this process occurs during:
- Day
 - Night
 - Day and night
 - None of the above

49. The reverse process of photosynthesis is known as:
- Transpiration
 - Respiration
 - Regurgitation
 - a & b
50. Vegetables like turnip, carrot and radish are examples of modified forms of:
- Stem
 - Root
 - Leaves
 - Stem and Roots
51. Ginger and potato are important cash crops for farmers in Bhutan. They are modified forms of :
- Roots
 - Leaves
 - Branches
 - Stem
52. Scientific names are a part of standard nomenclature. The fruit with scientific name *Mangifera indica* is commonly known as:
- Apple
 - Mandarin
 - Mango
 - Avacado
53. The major cash crops of Bhutan include:
- mandarin
 - apple
 - potato
 - all of these
54. Bhutan is by and large self-sufficient in the production of which of this food crop:
- rice
 - mustard
 - maize
 - sorghum
55. Farming systems in Bhutan can be largely categorized as:
- market-oriented
 - subsistence
 - shifting cultivation
 - none of these
56. Air contains 0.03% of carbondioxide. The process of removal from and return of carbondioxide to air is called:

- a. Water cycle
 - b. Carbon cycle
 - c. Nitrogen cycle
 - d. None of the above
57. Global warming can be caused due to:
- a. Increasing carbondioxide
 - b. Increasing temperature
 - c. Greenhouse effect
 - d. All of these
58. An experiment with 4 treatments and 3 replications will have the degrees of freedom as :
- a. 6
 - b. 12
 - c. 9
 - d. 11
59. Research results are subject to statistical analysis to make inferences. The following is a popular statistical package used by researchers:
- a. Microsoft word
 - b. GENSTAT
 - c. Power point
 - d. Calculus
60. There are several experimental designs used in biological research. One of the popularly used designs in Bhutan is:
- a. Augmented design
 - b. Latin square design
 - c. Randomized Complete Block design
 - d. Split Plot design
61. Which of the following is not an agent of physical weathering for formation of soils?
- a. temperature
 - b. water
 - c. oxidation and reduction
 - d. wind
62. Grass carp feeding on aquatic weeds is an example of:
- a. chemical control
 - b. integrated control
 - c. mechanical control
 - d. biological control

63. Duroc is a cross breed of:
- poultry
 - pig
 - horse
 - dog
64. Biological diversity, which is the richness and variety of life on Earth, is threatened by several activities including:
- habitat degradation
 - brown sector activities
 - illegal and over exploitation
 - all of the above
65. The Bhutan Trust Fund (BTF), an autonomous body under the Royal Charter, was founded in:
- 1971
 - 1981
 - 1991
 - 2001
66. The environment and forest policies of the Royal Government of Bhutan accord high priority on:
- commercialization and revenue generation
 - promotion of mass tourism
 - conservation and sustainable use
 - all of these
67. The main thrust of the 10th Five Year Plan of the Royal Government of Bhutan is:
- tourism
 - food security
 - environment conservation
 - poverty alleviation
68. Ap Dorji, a farmer in Punakha owns four langdos of rice field. This approximately equals:
- half an acre
 - one acre
 - two and half acres
 - none of these
69. The latest national poverty line in Bhutan (in Nu per person per month) and percent people living below the poverty line are:
- Nu 740 and 31.7%
 - Nu 1096.94 and 23.2%
 - Nu 1564.42 and 25.7%

d. none of these

70. The process of obtaining new plant or animal species from outside of a country can be defined technically as:
- importation
 - introduction
 - quarantine
 - research

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

Write short notes on the following, with reference to Bhutan:

- Biological diversity
- Avian flu
- Community forestry
- Renewable natural resources
- Eco-tourism
- Organic farming
- Bioprospecting
- Climate change
- Food security
- Sustainable development

GOOD LUCK!