

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2021
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALISATION PAPER FOR ENVIRONMENTAL SCIENCE

Date	: October 31, 2021
Total Marks	: 100
Writing Time	: 150 minutes (2.5 hours)
Reading Time	: 15 minutes (prior to writing time)

GENERAL INSTRUCTIONS:

1. Write your Registration Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
3. This paper consists of **TWO SECTIONS**, namely SECTION A & SECTION B:
 - **SECTION A** has two parts: Part I - 30 Multiple Choice Questions
Part II - 4 Short Answer Questions
All questions under SECTION A are **COMPULSORY**.
 - **SECTION B** consists of two Case Studies. Choose only **ONE** case study and answer the questions of your choice.
4. All answers should be written on the Answer Booklet provided to you. Candidates are not allowed to write anything on the question paper. If required, ask for additional Answer Booklet.
5. All answers should be written with correct numbering of Section, Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating the Section, Part and Question Number will NOT be evaluated and no marks will be awarded.
6. Begin each Section and Part in a fresh page of the Answer Booklet.
7. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
8. Use of any other paper including paper for rough work is not permitted.
9. **You must hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
10. This paper has **7 printed pages**, including this instruction page.

GOOD LUCK

SECTION A

PART I: Multiple Choice Questions [30 marks]

Choose the correct answer and write down the letter of your chosen answer in the Answer Booklet against the question number e.g. 31 (d). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. When is the World Water Day observed?
 - a) 22 March
 - b) 22 May
 - c) 5 June
 - d) 16 September

2. Hiking and sightseeing are an example of which of the following ecological services?
 - a) Cultural
 - b) Regulatory
 - c) Supportive
 - d) Provisional

3. Which one of the following is top megadiverse country?
 - a) India
 - b) China
 - c) Costa Rica
 - d) Brazil

4. The protection, management and preservation of genetic diversity, species and ecosystem is called
 - a) Restoration of biodiversity
 - b) Management of biodiversity
 - c) Conservation of biodiversity
 - d) Preservation of biodiversity

5. According to the Sustainable Development Goal 13, the biggest threat toward development is
 - a) Climate change
 - b) Pollution
 - c) Water
 - d) Population growth

6. Reusing or recycling old items instead of buying new ones helps shrink your carbon footprint by
 - a) eliminating the need for new packaging to be created.
 - b) cutting out the carbon dioxide when transporting new products to the store.
 - c) making sure you don't buy more than you need.
 - d) All of the above.

7. Which of the following is a major health consequences of environmental degradation, especially in developing countries?
 - a) Waste
 - b) Pollution
 - c) Clean water
 - d) All of the above

8. A major argument for the use of biotechnology is
 - a) in genetic engineering, which increases biodiversity.
 - b) in low-income countries, where the benefits are most likely to exceed risks.
 - c) in tissue culture, where the risk is small.
 - d) Both b) and c)

9. The least-cost method of abating greenhouse gases internationally is through
 - a) limiting emission to 1990 levels.
 - b) stabilizing average temperatures at 1990 levels.
 - c) tradeable emission permit.
 - d) data are lacking to choose among the above-mentioned options.

10. The time required by rain water to reach the outlet of drainage basin is generally called
 - a) Time of concentration
 - b) Time of overland flow
 - c) Concentration time of overland flow
 - d) Duration of the rainfall

11. A land is known as waterlogged when
 - a) the permanent wilting point is reached.
 - b) gravity drainage has ceased.
 - c) capillary fringe reaches the root zone of plants.
 - d) None of the above

12. What is a snag?
 - a) Standing dead tree.
 - b) Standing live tree.
 - c) Felled tree.
 - d) None of the above.

13. The criticism about large dams are that they
 - a) displace large number of population without proper rehabilitation.
 - b) damage downstream ecosystem.
 - c) contribute enormously to deforestation and loss of biodiversity.
 - d) All of the above.

14. The measure of biodiversity of an area is
 - a) the number of species found there.
 - b) the range of different life forms.
 - c) both a) and b)
 - d) None of the above.

15. Microbes which are capable of growing over a wide range of temperatures are called
- Stenothermal
 - Thermotolerant
 - Thermophilic
 - Eurythermal
16. What is the best definition of conservation?
- Setting aside land and natural resources.
 - Careful management of land and resources.
 - Using land and natural resources based on current needs.
 - Protecting land and natural resources from human activities.
17. Which of the following diseases affect women easily than that of men?
- Hepatitis
 - Arthritis
 - Heart attack
 - Joint arthritis
18. Why radiologists do not take direct X-ray photographs of intestines?
- X-rays can't cross intestine.
 - X-rays are not able to capture clear picture.
 - Intestines are affected by direct exposure to X-rays.
 - Even short exposure of X-rays causes cancer in intestines.
19. Carrying capacity of a population is determined by
- Population growth rate
 - Natality
 - Mortality
 - Limiting resources
20. In order to maintain proper ecological balance
- forest should be cleared and new ones planted.
 - a tree should be planted in place of one that is cut for other uses.
 - some quick growing annuals should be planted if a tree is cut for other uses.
 - None of the above.
21. Which is the most scientific way to conserve the plant diversity of an area?
- By developing seed banks.
 - By tissue culture method.
 - By creating biosphere reserves.
 - By creating botanical gardens.
22. Which group of animals is known to show maximum diversity?
- Mammals
 - Reptiles
 - Birds
 - Insects

23. Which of the following are major environmental issues associated with mining?
- Air pollution
 - Water pollution
 - Soil degradation
 - All of the above.
24. What is the most important remedy to avoid negative impact due to industrialization?
- Industry should be closed.
 - Do not allow new industrial units.
 - Industry should treat all the wastes generated by it before disposal.
 - Industries should be shifted far away from human settlements.
25. What is the adverse effect of modern agriculture?
- Water pollution
 - Soil degradation
 - Water logging
 - All of the above.
26. The Forest and Nature Conservation Act was enacted in which of the following year?
- 1969
 - 1974
 - 1995
 - 2000
27. When was the climate change policy in Bhutan endorsed?
- 1995
 - 2000
 - 2007
 - 2020
28. Which of the following is the best indicator of SO₂ pollution?
- Bryophytes
 - Pteridophytes
 - Lichens
 - Algae
29. What is Kyoto Protocol?
- It is an agreement among countries to take steps for reducing global warming.
 - It is an agreement among countries to take steps for reducing Ozone Depleting Substances.
 - It is an agreement among countries to take steps for planting trees to control pollution.
 - It is an agreement among countries to start using nuclear energy.
30. Which of the following country has organized its cabinet meeting under the sea to draw attention of the world toward the global warming and its threats?
- Maldives
 - Sri Lanka
 - Fiji
 - Indonesia

PART II – Short Answer Questions [20 marks]

This part has 4 Short Answer Questions. Answer ALL the questions. Each question carries 5 marks.

1. What is the biodiversity hotspots?
2. What are some of the causes of glacial lake outburst floods?
3. What is sanitation felling in forestry?
4. What are some of the benefits of maintaining a free flowing river?

SECTION B: Case Study [50 marks]

Choose either CASE I OR CASE II from this section. Each case study carries 50 marks. Mark for each sub-question is indicated in the brackets.

CASE I

A growing number of countries at all levels of development have legislations or regulations prescribing the application of Strategic Environmental Assessment (SEA) and many more are introducing it as part of their policy tools. In Bhutan the Environmental Impact Assessment was formalized in 2000 after the enactment of the Environmental Assessment Act, 2000. In 2002, the Regulation for the Environmental Clearance of Projects has included the need for SEA. SEA is a very important tool in the management of environment. This tool has been applied in Bhutan few times.

1. What is Strategic Environmental Assessment? (5 marks)
2. Mention development activities in Bhutan that are relevant for application of SEA. (5 marks)
3. What is the difference between Environmental Impact Assessment and SEA? (10 marks)
4. What will be some of the benefits for using this tool? (20 marks)
5. Would you recommend this tool to the environmental professionals? Explain your justification. (10 marks)

CASE II

The fact that environment in Bhutan is still considered to be in a pristine state is attributed to the far-sighted visions and leaderships of our beloved Kings. With the strong emphasis on the environmental conservation in Bhutan, the government has approved several environment related policies and the National Assembly also enacted many legislations with various provisions on environment. As a citizen of Bhutan, it is imperative to know these policies and legislations and it becomes more important for a person working in the environment field. With this understanding, provide answers to the following questions:

1. List the environment related policies that the Royal Government has adopted thus far. (5 marks)
2. Briefly explain each of the policy listed above. (15 marks)
3. List environment related Acts that the National Assembly of Bhutan has enacted thus far. (5 marks)
4. Briefly explain each of the Act listed above. (15 marks)
5. Discuss whether Bhutan has adequate Policies and Acts to safeguard the environment. Justify your opinion. (10 marks)

TASHI DELEK