

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2018
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALISATION PAPER FOR ENVIRONMENTAL SCIENCE

Date	: 7 October 2018
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 being provided 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 QuestionsAll 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 are required to 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. The Biosphere consists of
 - a) Lakes
 - b) Soils
 - c) Solid sediments
 - d) All of the above

2. The set of ecosystems is called a
 - a) Biome
 - b) Climate
 - c) Subsystem
 - d) Structure

3. Biotic Environment includes
 - a) Producers
 - b) Consumers
 - c) Decomposers
 - d) All of the above

4. Global warming is also referred to as
 - a) Climate change
 - b) Ecological change
 - c) Atmospheric change
 - d) None of the above

5. Which of the following is not a greenhouse gas?
 - a) Carbon dioxide
 - b) Methane
 - c) Nitrous oxide
 - d) Carbon monoxide

6. As you go down into a well, your weight
 - a) increases slightly.
 - b) decreases slightly.
 - c) remains exactly the same.
 - d) None of the above.

7. The ingredient that makes a plastic biodegradable is
 - a) Vegetable oil
 - b) Petroleum

- c) Cornstarch
 - d) Leather
8. If a metal can be drawn into wires relatively easily, it is called
- a) Malleable
 - b) Ductile
 - c) Extractive
 - d) Tactile
9. The word atom is from a Greek word meaning
- a) Small
 - b) Indivisible
 - c) Unseen
 - d) Visible
10. Nitrous oxide, commonly called laughing gas, has been a matter of concern to environmentalists because
- a) it is thought to cause cancer at low concentration.
 - b) it produces photochemical smog.
 - c) it is a greenhouse gas.
 - d) None of the above
11. Ozone in the upper atmosphere is produced from
- a) Lightning
 - b) Photochemical reaction
 - c) Electrical appliance on Earth
 - d) Model fractals
12. What is essential in an Environmental Impact Assessment?
- a) That it allows decision makers to assess a project's impact in all its phases.
 - b) That it allows the public and other stakeholders to present their views and input on the planned development.
 - c) That it contributes to and improve the project design, so that environmental as well as socioeconomic measures are core parts of it.
 - d) All of the above.
13. At a constant pressure, hot air _____ than cold air.
- a) is more dense.
 - b) is less dense.
 - c) has more vapour.
 - d) has less vapour.
14. If Earth had no greenhouse gases, the planet would be _____
- a) too hot to support life.
 - b) cooler but still able to support life.
 - c) too cold to support complex life.
 - d) it depends on the species of aerosol in the GHG-Free atmosphere.

15. In some regions, the combination of acid rain and smog damage forests that is worse than the impact of either acid rain or smog on its own. This is an example of
- Specificity
 - Acute toxicity
 - Chronic toxicity
 - Synergistic action
16. Which of the following best accounts for mercury's significant harm to the environment?
- Persistence
 - Degradability
 - Specificity
 - Synergism
17. A scientist states that the sewerage outlet project must be ecologically sustainable. This means that the project must
- meet the needs of the current population without compromising the needs of the future generations.
 - not affect the ecology of the nearby streams in any way.
 - take into account the particular ecology of the nearby area.
 - maintain the biodiversity of the nearby water bodies.
18. Carrot is orange in colour because
- it grows in the soil.
 - it is not exposed to sunlight.
 - it contains carotene.
 - the entire plant is orange in colour.
19. Potato is modified form (outgrowth) of
- Root
 - Stem
 - Fruit
 - Leaf
20. Most of the red, blue and purple colours of plants are due to pigment called
- Anthocyanin
 - Carotene
 - Chlorophyll
 - Xanthophylls
21. As per the National Integrated Water Resources Management Plan of Bhutan 2016, there are _____ major hydrological basins in the country.
- one
 - three
 - five
 - seven

22. Which of the following is not a direct pressure affecting Biodiversity in Bhutan?
- Natural habitat loss
 - Land use conversion
 - Forest fire
 - Climate change
23. Which is not a critically threatened mammal species found in Bhutan?
- Sus Salvanius* (Pygmy Hog)
 - Gyps bengalensis* (White-rumped Vulture)
 - Ardea insignis* (White-bellied Heron)
 - Aquila heliaca* (Eastern Imperial Eagle)
24. At Kuenselphodrang in Thimphu, 100 volunteers planted 49, 672 saplings in one hour establishing a new Guinness World Record for tree planting on
- 2 June 2015
 - 2 June 2016
 - 5 June 2015
 - 5 June 2016
25. Bhutan launched The Middle Path: National Environment Strategy, as a balanced approach to socio-economic development on
- 17 December 1996
 - 17 December 1997
 - 17 December 1998
 - 17 December 1999
26. The primary consumers are also called as
- Herbivores
 - Carnivores
 - Enzymes
 - None of the above
27. Favorable morphological and physiological response to a change in environment is called
- Preadaptation
 - Ecotyping
 - Formation of ecophenes
 - Acclimatization
28. The _____ of the Constitution of the Kingdom of Bhutan 2008 is on environment.
- Article 3
 - Article 5
 - Article 7
 - Article 11
29. Plants adapted to open, sunny habitats are
- Sciophytes
 - Heliophytes

- c) Mesophytes
 - d) Epiphytes
30. Which one is nature's cleaner?
- a) Consumers
 - b) Producers
 - c) Decomposers and Scavengers
 - d) None of the above

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 minimum environmental flow? (5 marks)
2. People in the villages in Bhutan are claiming that the water sources are drying up. What is your view? (5 marks)
3. Should vehicle owners pay more in taxes as a result of the environmental pollution caused? Please provide your views. (5 marks)
4. Mention some non-wood forest produce found in Bhutan. (5 marks)

SECTION B

Case Study

Choose either Case I OR Case II from this section. Each case study carries 50 marks.

Case I

Bhutan is a small landlocked country and is part of the Eastern Himalayan region which contains parts of three global biodiversity hotspots, 60 ecoregions, 330 Important Bird Areas, 53 Important Plant Areas, and a large number of wetlands including 29 Ramsar sites. Despite its size, it is very rich in biodiversity. As a candidate, who has studied about the environment, answer the following:

1. What is biodiversity? (5 marks)
2. What are the two main types of biodiversity conservation practiced in the country? Substantiate your answers with examples. (10 marks)
3. List threats to biodiversity in the county and explain each one of them. (20 marks)
4. Discuss about the values of biodiversity. (15 marks)

Case II

Bhutan is known to the outside world to have a pristine environment. Bhutan has about 71% of its land cover under forests. However, with recent economic development, the quality of environment is degrading which will ultimately have an impact on human health. Please answer the following questions:

1. What is environmental pollution? (5 marks)
2. What are the types, causes, and effects of pollution (25 marks)
3. Suggest some solutions to pollution problems (10 marks)
4. Provide your views on global Environmental Pollution Trends (10 marks)

TASHI DELEK