



UNIVERSITY OF COLOMBO, SRI LANKA

FACULTY OF TECHNOLOGY

LEVEL II EXAMINATION IN TECHNOLOGY - SEMESTER II - 2020

ET1008 – CHEMICALS IN THE ENVIRONMENT

Two (02) hours

Answer all the questions.

No. of pages: 11

**Important Instructions to Candidates**

- If a page or part of this question paper is not printed, please inform the supervisor immediately
- Enter your index number on all pages of the answer script
- Write the answers to the questions in the space provided in the question paper.
- Electronic devices capable of storing and retrieving text, including electronic dictionaries and mobile phones are not allowed.

**Index No: .....**

Please use this space for any additional information provided by the setter

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The paper consists of **Part A** and **Part B**. Answer **three** questions from **Part A**. Answering all the MCQ questions in **Part B are compulsory**.

## **Part A**

Answer **all (03)** questions

1. Write short notes on four (4) of the below given [Marks 25\*4=100]
- i. Soil contamination
  - ii. Noise, vibration, and offensive odor
  - iii. Suspended particulate matter
  - iv. Photochemical oxidants
  - v. Acid rain
  - vi. Ozone layer depletion

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2. i. What is the chemical composition of the earth? [Marks 30]

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ii. If pollutants are on the surface of soil, what are the three processes that can move the pollutants to other places? [Marks 30]

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iii. How does the pollution in the lithosphere occur? [Marks 40]

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3. A field visit was made to the Nevil Fernando hospital in order to understand the nature of clinical chemicals that could be released into the environment and the treatment process of these chemicals before releasing to the environment. Explain in detail the clinical chemicals waste and its treatment process in the Nevil Fernando hospital. [Marks 100]

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## Part A

Answer all MCQ questions

[Marks 100]

1. Select the **correct** answer

- a) The atmosphere is the thin layer of gases that cover Earth's surface
- b) The atmosphere is a very thick layer of gases that cover Earth's surface
- c) The atmosphere has no layer of gasses
- d) The atmosphere has no layers

2. Which of the below given statements is **wrong** about the atmosphere

- a) Absorbs energy and damaging ultraviolet radiation from the sun
- b) Transports energy away from equatorial regions
- c) Serves as a pathway for vapor-phase movement of water in the hydrologic cycle
- d) Does not do any of the above

3. Select the **correct** statement related to the Carbon cycle

- a) **CO<sub>2</sub> is released by respiration of plant and animal**
- b) CO<sub>2</sub> is released by dissolution of CO<sub>2</sub> in water
- c) Burning in Industry absorb CO<sub>2</sub>
- d) CO<sub>2</sub> is released during rock weathering

4. At present, many environmental issues exist that have grown in size and complexity day by day, threatening the survival of mankind on earth. Which of the given statement is wrong?

- a) The London smog of 1952 killed about 4000 people
- b) The Mediterranean sea turning into Dead Sea in the 1950s was able to support aquatic life
- c) Death of a number of Japanese people was caused because of eating fish from the Minamata Bay in the 1960s
- d) Historical monuments and statues in Greece and Italy are getting damaged by the effect of rainwater

5. Which of the following is **not** a main air pollutant
- a) Carbon monoxide
  - b) Particulates
  - c) Aluminium oxide
  - d) Volatile organic compounds
6. Select the **correct** statement
- (a) The lithosphere varies from 50 to 100 km in thickness.
  - (b) The lithosphere varies from 500 to 1000 km in thickness.
  - (c) The lithosphere varies from 5 to 10 km in thickness
  - (d) Above all
7. Which of the following statement is **wrong**
- (a) Carbon may be present as gaseous atmospheric CO<sub>2</sub>
  - (b) Carbon may be dissolved in surface water and groundwater as HCO<sub>3</sub><sup>-</sup> or molecular CO<sub>2</sub>(aq)
  - (c) Carbon may be as minerals, particularly calcium and magnesium carbonates such as CaCO<sub>3</sub>
  - (e) Photosynthesis fixes organic and inorganic C as biological carbon
8. Which statement is **correct** related to the Hydrologic Cycle
- (a) Some the water in the surface of the earth
  - (b) Amount of water is essentially constant and moves between different reservoirs
  - (c) 1000 – 100,000 million billion gallons move through the Hydrologic Cycle
  - (d) Above all are correct
9. Which statement is **correct** in relation to distribution of water;
- (a) The Glaciers and polar ice consists of  $10.34 \times 10^7 \text{ km}^3$
  - (b) Underground waters are of  $25.54 \times 10^7 \text{ km}^3$
  - (c) The Oceans  $1.40 \times 10^9 \text{ km}^3$
  - (d) The Atmosphere consist of  $15.5 \times 10^4 \text{ km}^3$

10. Which of the statement is **wrong** about groundwater
- a) 22% of all fresh water occur underground
  - b) An Aquifer is an underground formation that holds and yields water
  - c) A good aquifer needs to be both porous and permeable
  - d) Ground water is found in the surface of the earth
11. Which of the following is **not** true about CO
- a) It is one of the most serious air pollutants, poisonous in nature, and 96.5% as heavy as air.
  - b) Since CO is an odourless gas, its presence in the air is not detectable during breathing.
  - c) The main source of CO in the air is automobile exhaust.
  - d) CO constitutes 30% of all automobile exhausts
12. Which is **not** one of the four environmental segments
- a) Atmosphere
  - b) Hydrosphere
  - c) Lithosphere
  - d) Groundwater
13. Which is **not** a main air pollutant
- a) Carbon monoxide
  - b) Particulates
  - c) Sulphur oxides (SO<sub>x</sub>)
  - d) Polymerase enzymes
14. Which is not a chemical reaction that **does not** release CO in to the atmosphere
- i. Incomplete combustion of fuel or carbon-containing compounds
  - ii. Dissociation of CO<sub>2</sub> at high temperature
  - iii. Decomposition of Aluminium Oxide
  - iv. A high-temperature reaction between CO<sub>2</sub> and carbon-containing material

15. Physical method that **does not** involve in particulate formation is;

- (a) Adhesion
- (b) Coagulation
- (c) Dispersion
- (d) Acceleration

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