



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1 Examination in Engineering: May-2022

Module Number: CE1101 Module Name: Basic Concepts in Environmental Engineering

SECTION – A

[One Hour]

[Answer all questions in the Exam Paper itself]
[20 MCQs + 10 fill-in-the blanks = 30 Questions]

Index Number:

Read all the instructions carefully (20 MCQs):

- **Select the BEST answer** for the questions 1 to 20.
- Each question carries **1.0 Mark**.
- Please note that wrong answer will result in **NEGATIVE** marks (- 0.25 Marks for each wrong answer) for only the **MCQ questions 1 to 20**.
- Negative marks of this section will **NOT** carry forward to other sections.
- Questions not attempted will result in zero marks.
- **Total Marks= 20**

-
- 1) Earth is already showing many signs of worldwide climate change. Average temperatures have climbed degree Celsius around the world since 1880.
- a) 0.5
 - b) 1.5
 - c) 2.5
 - d) 3.5
- 2) Which of these is the correct statement for the 'global warming'?
- a) Global warming will increase the urbanization rate
 - b) Global warming effects can be seen only in the atmosphere
 - c) SO₂ is considered as a direct greenhouse gas
 - d) Global warming can also increase the vector bone diseases
- 3) The Sri Lankan Standard (SLS) for Fluoride in drinking water is less than, while that of WHO guidelines is less than 1.5 mg/L.
- a) 2.5 mg/L
 - b) 2.5 mg/L
 - c) 1.0 mg/L
 - d) 0.5 mg/L

- 4) What can be the order of the following water sources based on their electric conductivity?
i) Upstream of a River ii) Lagoon Water iii) Ground Water
- a) i) > ii) > iii)
b) iii) > ii) > i)
c) ii) > iii) > i)
d) ii) > i) > iii)
- 5) Which one of the following gases is **NOT** included in the category 'greenhouse gases'?
i) Argon ii) Ozone iii) Methane iv) Nitrous oxide
- a) i) Only
b) i) and ii) Only
c) ii) Only
d) ii) and iv) Only
- 6) In a polluted river with Hg, which one of the following may contain the maximum amount of Hg?
- a) Water birds
b) Small fish
c) Big fish
d) Algae
- 7) Waste generation rate is essential to predict future waste generation and to evaluate the waste generation trends. What can be the average waste generation rate in Sri Lanka?
- a) 0.2 to 0.9 kg/capita /day
b) 0.4 to 0.8 m³/capita /day
c) 1.0 to 3.0 kg/capita /day
d) 1.0 to 3.0 m³/capita /day
- 8) Which one(s) of the followings is (are) considered as '**renewable**' energy source?
(i) Biomass (ii) Bio gas (iii) Natural gas
- a) (ii) Only
b) (i) and (ii) Only
c) (i) and (iii) Only
d) (ii) and (iii) Only
- 9) What is the approximate per capita daily water demand in Sri Lanka?
- a) 120 m³
b) 12 m³
c) 120 L
d) 1200 L

- 10) The 'energy efficiency' is a very important factor for achieving sustainable development. An integrated energy efficient system may include,
- (i) Sky lights (ii) Solar hot water system (iii) Photovoltaics
- a) (ii) Only
b) (i) and (ii) Only
c) (ii) and (iii) Only
d) All (i) , (ii) and (iii)
- 11) is essential for all living things as it is a component of protein.
- a) Hydrogen
b) Nitrogen
c) Phosphorus
d) Oxygen
- 12) What can be the sources of "Nitrate" in water?
- (i) Fertilizer (ii) Wastewater (iii) Industrial water
- a) (i) Only
b) (i) and (ii) Only
c) (i) and (iii) Only
d) All (i) , (ii) and (iii)
- 13) What is the average pH value in acid rain?
- a) 7 to 8
b) < 3
c) 5 to 6
d) < 6
- 14) How much greater is the [H⁺] in a solution with pH 2.5 than in a solution with pH 5.0 ?
- a) 2.5 times
b) 3 times
c) 316 times
d) 1,000 times

- 15) It was found that 39 mg of NaCl has been dissolved in a 100 mL water sample. What will be its "concentration" in percentage?
- a) 39 %
 - b) 3.9 %
 - c) 0.039 %
 - d) 0.0039 %
- 16) Which one of the following is correct on "Solid Waste"?
- a) Average countrywide solid waste data can be used in a specific city context
 - b) Low economic standing is directly related to an increase in solid waste volume
 - c) Rural villages and small towns have significantly higher values of generated waste per capita
 - d) Average lifespan of many consumer products is increasingly reduced
- 17) Which of the following water quality parameter is NOT considered as chemical parameter?
- a) Turbidity
 - b) Dissolved Oxygen
 - c) Nitrate
 - d) Heavy metals
- 18) If 0.065 mg of salt is dissolved in 650 mL of water, what will be the concentration of salt?
- a) 100 ppb
 - b) 100 ppm
 - c) 0.01 ppb
 - d) 0.001 ppm
- 19) What is the **wrong** statement on EIA process in Sri Lanka?
- a) EIA must be carried out for prescribed projects in Sri Lanka
 - b) EIA is focused only on impacts imposed by a project on air, water, and land
 - c) An EIA report not only indicates significant likely environmental impacts, but also suggests possible mitigatory measures for them.
 - d) Analyzing the base line situation of the project environment is one of the objectives of an EIA process
- 20) The "Brown or Brackish" color of groundwater may be caused by,
- a) Iron Oxides
 - b) Calcium Oxides
 - c) Manganese Oxides
 - d) Both (a) and (c)

Read all the instructions carefully (10 fill-in-the blank questions):

- **Fill in the blanks with the most appropriate word/s for questions 21 to 30.**
 - **Each filled blank carries 1 Mark**
 - **Questions not attempted will result in zero mark.**
 - **Total Marks= 10**
-

- 21) Ecology is the study of systems that include interactions among and between the and their interaction with
- 22) Climate change effects can be seen in all components of the climate system, including atmosphere,, cryosphere, land surface and
- 23) is the converting of solar energy into direct current electricity using semiconducting materials
- 24) disease is caused by cadmium (Cd) exposure, produced because of human activities related to industrialization.
- 25) In most cases and are the limiting nutrients factors in aquatic plant growth.
- 26) is made up of liquid droplets and solid particles, which are fine enough to be suspended in the air.
- 27) "Natural Hydrological Cycle" is the movement of water involving; Evaporation, Transpiration, Condensation, Precipitation, and Runoff.