



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1 Examination in Engineering: August 2018

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

SECTION – A

[One Hour]

[Answer all questions in the Exam Paper itself. Total Marks 30]

Underline the BEST answer for the questions 1 to 20. Each question carries 1 Mark
[Total Marks= 20]

- 1) Progress that meets the needs of the present generation without compromising the ability of future generations to meet their own needs is called;
 - a) Green building construction
 - b) Sustainable development
 - c) Environmental sustainability
 - d) Energy and water efficiency
 - e) Globalization

- 2) Which of these is NOT correct on global warming?
 - a) Greenhouse gas enhance the absorbing and re-emitting infrared radiation toward the earth
 - b) Global warming will increase the urbanization rate
 - c) Global warming effects can be seen in atmosphere, hydrosphere, land surface and biosphere
 - d) Ozone is considered as a greenhouse gas
 - e) Global warming can also increase the vector bone diseases

- 3) What is the major source of the global CO₂ emission by sector?
 - a) Industries
 - b) Vehicles
 - c) Buildings
 - d) Volcanic activities
 - e) Aero planes

- 4) Earth is already showing many signs of worldwide climate change. Average temperatures have climbed degree Celsius around the world since 1880.
 - a) 10
 - b) 1
 - c) 5
 - d) 8
 - e) 0.3

- 5) Which of these is NOT an expected effect of climate change?
- a) Sea levels rising
 - b) Flooding in coastal cities
 - c) Expanding glaciers
 - d) Extreme weather condition
 - e) Forest fires
- 6) In a lake polluted with pesticides, which one of the following may contain the maximum amount of pesticides?
- a) Small fish
 - b) Microscopic animals
 - c) Big fish
 - d) Water birds
 - e) Both a) and b)
- 7) Hardness in water is measured by the amount of
- a) Ca^{2+}
 - b) Zn^{2+}
 - c) Mg^{2+}
 - d) Both a) and b)
 - e) Both a) and c)
- 8) A good indicator of water quality is the number of
- a) Ducks
 - b) Fish
 - c) Turtles
 - d) Coliform bacteria
 - e) Protozoa
- 9) High coliform counts in water indicate
- a) Contamination by human wastes.
 - b) Phosphorus contamination.
 - c) Nitrogen contamination
 - d) High level of hardness
 - e) hydrocarbon contamination.
- 10) All the following are considered Toxic Metal pollutants in water, EXCEPT
- a) Arsenic
 - b) Cadmium
 - c) Potassium
 - d) Lead
 - e) Mercury
- 11) Which of the following statement is NOT correct on "Metals" in water
- a) Some of the heavy metals in water show "Biomagnification" effect
 - b) Sodium is the most common nontoxic metal in water
 - c) Significant quantities of iron are usually found groundwater
 - d) "Minimata" disease was caused by toxicity of Cadmium metal
 - e) Around 2/3 of the Elements in Periodic Table are Metals

- 12) As per the worlds current per-capita fresh water availability, Sri Lanka is considered as;
- Water vulnerable country
 - Water stress country
 - Water scarcity country
 - Water shortage country
 - Water rich country
- 13) The natural recycling of water between the earth and the atmosphere is known as;
- Water saturation
 - Water condensation
 - Water precipitation
 - Hydrological cycle
 - Hydrological movement
- 14) Which of the following are NOT considered as Physical Water Quality parameter?
- Temperature
 - Turbidity
 - Colour
 - Alkalinity
 - Taste
- 15) Which of these is NOT considered as a source of Air Pollution?
- Combustion activities
 - Transportation sector
 - Industrial processes
 - Solid waste disposal sources
 - Water treatment plants
- 16) There are 2 levels of environmental impact assessment process in Sri Lanka. One is EIA and the other is IEE. What is meant by IEE?
- Initial Environmental Examination
 - Impact Evaluation Examination
 - Indigenous Environmental Evaluation
 - Industrial Environment Evaluation
 - Impact of Environmental Examination
- 17) What is the correct statement on EIA process in Sri Lanka
- EIA must be carried out for all type projects in Sri Lanka
 - EIA is only concerned on negative impact by a project.
 - EIA is only focused on impact to air, water and land by a project
 - From the EIA process adverse impacts can be addressed before final approval decisions are made for a project
 - Analyzing the base line situation of the project environment is the prime objective of an EIA process
- 18) An institute in dry zone Sri Lanka wants to use rainwater for non-potable use. They are going to use tile roof area (plan area) with 10m width and 25m length roof as catchment area.

Average monthly rainfall is 75 mm in this area and runoff coefficient for roof tile is 0.8. What is the amount of rain water they can collect in an average month in m^3 ?

- a) 25
 - b) 15
 - c) 19
 - d) 1875
 - e) 450
- 19) It was found that suspended solid concentration of a 50 mL water sample is 14.5 mg/L. What is the "dissolved solid concentration" of this sample if the total solid concentration is 111.8 mg/L.
- a) 126.3 mg/L
 - b) 97.3 mg/L
 - c) 1946 mg/L
 - d) 19.46 mg/L
 - e) 6.32 mg/L
- 20) Energy efficiency is very important factor for achieving sustainable development. Integrated energy efficient system may include;
- a) Sky lights
 - b) Solar hot water system
 - c) Photovoltaics
 - d) Both a) and b)
 - e) All a), b) and c)

Filling the blanks with most appropriate word/s for questions 21 to 29.

Each fill blank carries 1 Mark

[Total Marks= 10]

- 21) The primary health hazard from drinking water with nitrate-nitrogen occurs when nitrate is transformed to _____ in the digestive system.
- 22) It is well known that _____ in drinking water helps to prevent dental cavities when its concentration is within a certain limit.
- 23) Precipitation with a pH of 4 - 4.5 is called "acid rain" and is due to air pollution by _____ and _____ from vehicles and power plants.
- 24) _____ is the measure of water's ability to conduct an electric current.
- 25) _____ is measured in micro-siemens per centimeter.
- 26) A technology used for collecting and storing rainwater from rooftops or any surface is called as _____.
- 27) The environment around us can be categorized into Two basic factors. One is Abiotic Factors and the other is _____ Factors.
- 28) Energy that occurs naturally and repeatedly on earth and can be used for human benefits is known as _____.
- 29) The standard unit for Turbidity measurement is _____.