



UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA
FIRST SEMESTER EXAMINATIONS, NOV/DEC 2018

COURSE NO: MN/GM/MC/EL/CE 365

COURSE NAME: ENVIRONMENTAL MANAGEMENT

CLASS: MN/GM/MC/EL/CE 3 TIME: 3 HOURS

Name: _____ Index Number: _____

Attempt all questions in Section A, B and C

Section A [15 Marks]

1. Dust particles that are able to reach the alveoli of the lungs are called
 - a) Inhalable dusts
 - b) Non-respirable dusts
 - c) Respirable dusts
 - d) Coarse dusts

2. which of the following is not a chemical water quality parameter?
 - a) pH
 - b) conductivity
 - c) dissolve oxygen
 - d) turbidity

3. A water body with dissolve salts concentration less than 100 mg/L may be described as
 - a) Fresh water
 - b) Brackish water
 - c) Salt water
 - d) Sea water

4. The following cations may be responsible for hardness of water except
 - a) Ca^{2+}
 - b) Mn^{2+}
 - c) Fe^{3+}
 - d) Na^{+}

5. Which of the EIA activities below is used to determine whether a project requires a full or partial EIA?
- a) Scoping
 - b) registration
 - c) Screening
 - d) Public hearing
6. Particle sizes of dust may be defined
- a) Stocks volume Diameter
 - b) Aerodynamic mass Diameter
 - c) Projected surface Diameter
 - d) None of the above
7. A firedamp is a mixture of which of the gases?
- a) $\text{CH}_4 + \text{N}_2 + \text{air}$
 - b) $\text{CO}_2 + \text{N}_2 + \text{air}$
 - c) $\text{CO} + \text{CO}_2 + \text{CH}_4 + \text{O}_2 + \text{N}_2 + \text{H}_2$
 - d) $\text{CH}_4 + \text{air}$
8. The weight in kg or g of water vapour per unit weight of dry air is called
- a) Absolute humidity
 - b) Specific humidity
 - c) Relative humidity
 - d) Degree of saturation
9. Which one of the following gases may be formed from the decay of wood and the decomposition of pyrites and gypsum?
- a) H_2S
 - b) CO_2
 - c) SO_2
 - d) NO

10. What does it mean when a calculated air quality index value is greater than Four (4)
- a) The environment is safe and desirable
 - b) The threat to health is moderate.
 - c) There is a distinct health hazard
 - d) The threat to health is minimal
11. The Middle layer of atmosphere is called
- a) troposphere
 - b) stratosphere
 - c) mesosphere
 - d) thermosphere
12. In which of the following layers of the atmosphere does temperature increase with increasing altitude
- a) troposphere
 - b) stratosphere
 - c) mesosphere
 - d) thermosphere
13. Which of the following is a powerful irritant which can aggravate symptoms of people who suffer from respiratory disorders?
- a) Sulphur dioxide
 - b) Carbon monoxide
 - c) Carbon dioxide
 - d) Oxides of nitrogen
14. Which of the following is not an effect of modern agriculture?
- a) Nitrate pollution
 - b) Eutrophication
 - c) Biomagnification
 - d) Ozone depletion
15. Superadiabatic later changes to inversion?
- a) Looping fan
 - b) Fanning fumes

- c) Fumigating fumes
- d) None of the above

Section B [15 Marks]

Indicate whether the statements in this section is True or False

1. At the dew point more water vapour can be added to a parcel of air provided the temperature of the air is increased.
2. Mine air often contains less N₂ and more O₂.
3. Fissure gases are otherwise known as interstitial gases
4. A blackdamp is a mixture of CO, CH₄ and air
5. The explosive range of methane in the atmosphere is 7% to 16%
6. Inversion leads to instability in the troposphere
7. All thermal stresses have adverse effect on man.
8. Dust particles that reach the alveoli are of larger sizes and referred to as non-respirable dust
9. The bronchioles end in small sacs called alveoli, in which the deoxygenation of the blood takes place.
10. Temperature increases with height in the troposphere
11. The Dry bulb Temperature may be used to determine the mean kinetic energy of the air molecules
12. Oxygen is paramagnetic whereas all the rest of the gases are diamagnetic.
13. The core temperature of a healthy individual experiencing no heat strain is normally between 36°C and 38°C
14. The amount of DO in any water body increases with increasing water temperature
15. At 100% relative humidity the wet bulb temperature equals the dry bulb temperature

Section C [30 Marks]

Answer Part One and Any Other Part

Part 1

1. Distinguish between the following:
 - a) Point source and non-point source pollution. [3 marks]
 - b) Deflagration and detonation. [2 marks]
 - c) Adiabatic lapse rate and environmental lapse rate. [2 marks]
2. Identify the three broad classification of gases according to their sources. [3 marks]
3. The physiological effect of CO poisoning depends on three main factors. State them. [3 marks]
4. Briefly explain how you would measure Virgin Rock Temperature. [2 marks]
5. State and explain the four threshold values that are used in the characterisation of gases. [4 marks]
6. What is effect temperature? [1 mark]

Part 2

1. Outline 3 factors that affect layering of gases. [3 marks]
2. What does it imply when the calculated layering number is less than 5? [2 marks]
3. Distinguish between respirable and non-respirable dust. [2 marks]
4. Briefly describe any three main activities in EIA. [3 marks]

Part 3

1. Outline 2 ways by which we can limit the amount of contaminants from internal combustion engines. [3 marks]
2. State any 4 environmental thermal stress factors. [2 marks]
3. Explain synergistic effect of gases. [2 marks]
4. Identify any 3 factors that affect the explosivity of dust particles. [3 marks]
5. What is the purpose of EIA? [3 marks]

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