UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

FIRST SEMESTER EXAMINATIONS, MAY 2018

COURSE NO: GL **236**
COURSE NAME: **ENVIRONMENTAL MANAGEMENT**
CLASS: **GL II** TIME: **3 HOURS**

Name**:** _____Index Number: _____

Attempt all questions in Section A, B and C

Section A [20 Marks]

1. Which of these gaseous pollutants is colourless?
   a. NO
   b. CO
   c. CH_4
   d. All the above
2. Water with a low levels of dissolved oxygen is referred to as_____.
   a. anoxygenic
   b. hypoxic.
   c. epoxygen
   d. none of the above
3. The unit for Konimetric concentration is _____
   a. mg/L
   b. ppm
   c. ppcc
   d. all of the above
4. Smoke can be best classified as a _____
   a. Gaseous pollutant
   b. Particulates
   c. Gaseous + Particulates
   d. None of the above
5. The capacity of water to neutralise acids is deduced by measuring _____.
   a. Alkalinity
   b. Turbidity
   c. pH
   d. Hardness
6. Particle sizes of dust may be defined_____
   a. Stocks' Equivalent Diameter
   b. Aerodynamic Equivalent Diameter
   c. Projected Area Diameter

d. all of the above

What is the nature of fumes encountered in the following lapse rates?

7. Superadiabatic lapse rate?
    a. Fumigating fumes
    b. Looping fumes
    c. Fanning fumes
    d. None of the above
8. Superadiabatic later changes to inversion?
    a. Fumigating fumes
    b. Looping fumes
    c. Fanning fumes
    d. None of the above
9. Inversion?
    a. Fumigating fumes
    b. Looping fumes
    c. Fanning fumes
    d. None of the above
10. Excess algae growth in lakes can be attributed to
    a. High levels of organic content
    b. High levels of suspended solids matter
    c. High levels of Phosphorus
    d. High levels of sulphur
11. The Alveolar Deposition Curve indicated that the most dangerous particle sizes were_____
    a. between 1 and 2 μm
    b. $>7\mu m$
    c. $<7\mu m$
    d. $\leq 7\mu m$
12. In a particular mine shaft, a 1200 m change in elevation is expected to translate into a_____ change in enthalpy.
    a. 11760 J/kg
    b. 122.45 J/kg
    c. 0 J/kg
    d. 1200 J/kg
13. Eutrophication is the result of excess of _____.
    a. Oxygen
    b. Acid
    c. Suspended solids

d. nutrients

14. Yaglou's effective temperature chart makes use of all the following except_____
    a. Wet bulb temperature
    b. Dry bulb temperature
    c. Globe temperature
    d. Velocity
15. Which of the following is true for the food chain succession in the aquatic ecosystem?
    a. From organic waste to nutrients
    b. From nutrients to phytoplankton
    c. From bacteria to phytoplankton
    d. From bacteria to zooplankton
16. CO toxicity is dependent on all except_____.
    a. The concentration of the gas
    b. The hours of sleep by the subject
    c. The duration of exposure of oxygen
    d. none of the above
17. White damp is a mixture of_____.
    a. carbon monoxide and air
    b. carbon dioxide and air
    c. methane and air
    d. carbon dioxide, carbon monoxide, methane and air.
18. Which of the following is true about Turbidity?
    a. It is a result of dissolved and suspended matter in water
    b. Measures the clarity of water
    c. Indirectly measures amount of suspended solids in the water
    d. All the above
19. _____ is a colourless, reactive gas that plays a major role in tropospheric ozone formation.
    a. NO
    b. CFC
    c. CH_4
    d. All the above
20. Which of the following EIA processes involves the terms of reference?
    a. Registration

b. Scoping
c. Screening
d. PER review

Section B [20 Marks]

Indicate whether the statements in this section is True or False

1. The wet bulb thermometer and the wet kata thermometer incorporate into their readings the evaporating capacity of the air
2. The principle of operation of interferometers is based on the change in resistance that causes an imbalance in a Wheatstone bridge?
3. Threshold Limit Value-Maximum Allowable Concentration is the maximum concentration within the during of 12 hours
4. Studies have shown that dust particles hardly ever reach the alveoli
5. O_2 is paramagnetic whereas all the rest of the gases are diamagnetic
6. The dust particles that reach the nasopharynx are smaller than those that get to the alveoli
7. Particulates with diameters equal to 0.1 um will not be affected by Brownian motion
8. Effective temperature is an example of Empirical method of heat stress index
9. The wet Bulb thermometer and the wet kata thermometer incorporate into their readings the evaporating capacity of the air
10. Phagocytes are also known as alveolar macrophages.
11. Silicosis is a form of Anthracosis.
12. After an EP is issued a 21-day public notices of the EIS publication shall be served for public information and reaction.
13. Effective temperature is an example of Empirical method of heat stress index.
14. The core temperature of a healthy individual experiencing no heat strain is normally between 36°C and 38 °C.
15. EIA is required for all developmental projects that will impact on the environment.
16. "pH" is an important water quality parameter. It is the negative logarithm of the hydrogen ion concentration.
17. The Johannesburg Curve was adopted at the Pharmoconiosis Conference.
18. The draeger pump is often used wheatstone bridges.

19. Brakes pads release zinc, while tire wear releases copper into the environment.
20. Heat cramps can be prevented by constant bathing and the provision of cool living quarters.

Section C [30 Marks]

Answer Question One and Any Other Question

Part 1

1. State the three (3) classifications of heat stress indices **[3 marks]**
2. Distinguish the following threshold limit values as used in industries: **[3 marks]**
    a. Threshold Limit Value – Time Weighted Average
    b. Threshold Limit Value - Short Term Exposure Limit
    c. Threshold Limit Value – Ceiling point

3. Define the Median Tolerance Limit of a pollutant. **[2 mark]**

4. Specify any four (4) factors that affect the formation of layers and the stability of layers formed. **[4 mark]**

5. State two (2) sensors employed in catalytic combustion detectors and give the principle of detection for each. **[4 marks]**

6. Differentiate between superadiabatic and subadiabatic lapse rate and state the nature of plumbs formed under such conditions **[4 marks]**

[20 marks]

Part 2

1. What is Pneumoconiosis? **[2 marks]**
2. Distinguish between respirable and non respirable dust **[2 marks]**

3. Explain the following …… **[2 marks]**
    i. heat stress
    ii. heat strain.

4. State any two mechanisms by which dust particles may be deposited onto the surface of the lungs.

5. Give any three (3) classifications that the harmfulness of mine and other industrial gases could be grouped into. **[3 marks]**

6. What are aerosols? **[1 mark]**

[10 marks]

Part 3

1. What is the use of the Coward's Triangle? [1 mark]
2. Identify any three (3) effect of eutrophication on an aquatic ecosystem **(3 marks)**
3. Give any three (3) examples of persons/groups involved in the EIA process. **[3 marks]**
4. Based on what principle are oxygen detector sensors able to detect? **[1 mark]**
5. Distinguish Biochemical Oxygen demand and Chemical oxygen demand**[2 mark]**

[10 marks]

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