KATHMANDU UNIVERSITY
End Semester Examination
March/April 2017

Marks Scored:

Level : B.Sc.
Year : II

Course : ENVS 201
Semester: I

Exam. Roll No.:

Time : 30 mins.

F.M. : 20

Registration No.:

APR 0 9 2017

Date :

SECTION "A"
[40 Q.×0.5=20 marks]

I. Choose and mark "X" in the most appropriate answer box:

1. The distance of Carbon and Hydrogen bond in an organic molecule is
[ ] 0.01 Angström [ ] 0.1 Angström [ ] 1.1 Angström [ ] 11 Angström

2. The decrease of about -10°C temperature per every kilometer height increase is
[ ] Moist adiabatic lapse rate [ ] Environmental lapse rate
[ ] Actual lapse rate [ ] Dry adiabatic lapse rate

3. The form of mineral that is most common in the Earth
[ ] Quartz [ ] Magnetite [ ] Silicates [ ] Calcite

4. The term lower atmosphere comprises
[ ] Troposphere and Stratosphere [ ] Stratosphere and Mesosphere
[ ] Troposphere and Mesosphere [ ] Thermosphere and Stratosphere

5. Temperature decreases with altitude in
[ ] Exosphere [ ] Thermosphere [ ] Stratoshpere [ ] Troposphere

6. In the atmosphere fog formation is
[ ] Primary aerosol [ ] Secondary aerosol
[ ] Tertiary aerosol [ ] Fog is not an aerosol

7. The concentration of this chemical is more than one percent in sea water
[ ] Calcium [ ] Bromide [ ] Strontium [ ] Fluoride

8. In a photochemical reaction, when excited species transfer energy to another species and becomes excited, it is known as
[ ] Intramolecular transfer [ ] Intermolecular transfer
[ ] Spontaneous isomerization [ ] Photoionization

9. It is not a greenhouse gas
[ ] O_3 [ ] H_2O [ ] N_2O [ ] O_2

10. The lifetime of aerosols in the troposphere compare to stratosphere is
[ ] Shorter [ ] Longer [ ] Equal [ ] Aerosols do not have lifetime

11. The contribution of Sodium salt for the salinity of sea water is about
[ ] 5% [ ] 15% [ ] 30% [ ] 55%

12. A mole of a light element like sodium and a mole of a heavy element like uranium contain the same numbers of
[ ] Electrons [ ] Protons [ ] Atoms [ ] Molecules

13. Normally the dissolved CO_2 in water is in the form of
[ ] H_2CO_3 [ ] CH_2O_2 [ ] H_2CO_2 [ ] HCOH

14. Methane and Carbon dioxide are greenhouse gases but CH_4 is ..... times more powerful than CO_2
[ ] 11 [ ] 21 [ ] 31 [ ] 41

15. The example of allochromatic mineral
[ ] Azurite [ ] Gypsum [ ] Diamond [ ] Quartz

16. It is not a normal exposure route especially considering environmental pollution
[ ] Inhalation [ ] Ingestion [ ] Dermal contact [ ] Injection

17. The "itai itai" disease (bones became fragile, high dose causes kidney failure, anemia and bone marrow disorders) is mainly due to the heavy metal
[ ] Hg [ ] Cd [ ] Pb [ ] Mn

18. One of the antidose for Arsenic poisoning which is capable of bonding with As(III) is
[ ] Dimercaptopropanol [ ] Metallothionein
[ ] ALA-dehydrase enzyme [ ] Antioxidant vitamin E

19. If 250ppm of carbon monoxide is exposed to human then the percent of oxy-hemoglobin converted to carboxy-hemoglobin is about
[ ] 5% [ ] 15% [ ] 30% [ ] 50%

20. This chemical occurs in seeds of fruits like apple, apricots, cherries, peaches and plums. It is bonded to sugar called amygdalin and is released by enzymatic or acidic hydrolysis in the stomach.
[ ] HCN [ ] DDT [ ] BHC [ ] PAN

II. Fill in the blanks with most appropriate answer/s:

21. The disease caused by disposal of industrial pollutants, Minamata, refers to the country .....

22. The increase or pile up of certain chemical from the environmental exposure within a living organism ....

23. The point at atmospheric layer where temperature rises with increasing altitude and reaches maximum of about -1°C at …… ……..

24. The lifetime of aerosols in the stratosphere is longer than in the troposphere due to the lack of ……..

25. …… …….. is the persistent and extreme cyclone occurring at the middle and upper troposphere and stratosphere

26. The bacteria that mediates in the oxidation of nitrite to nitrate…… ……

27. A very common and extremely important process in water and in soil that converts Nitrogen (III) to Nitrogen (V) is……..

28. The ultimate fate of different forms of sulfur in the atmosphere are finally converted into strong acid ……..

29. The law which states that the solubility of a gas in a liquid is directly proportional to the partial pressure of the gas in contact with the liquid……..

30. The measure of solar radiation energy received on a given surface area and recorded during a given time… …… ……

31. A common name of chemicals like hydroxic acid, hydroxylic acid, and hydrogen hydroxide is ……

32. A measure of the total concentration of ions in solution that influences the activity of solutes in aqueous solution…… ……..

33. The density range of saltier water like of ocans (kg/m^3) ……

34. The resistance time of some of the chemical is also measured in megaannum. In terms of years, one megaannum is equal to ……

35. Concentration expressed as the amount of substance per unit volume in mol/dm^3 is the the unit of ……

36. The most important ions components of alkalinity in continental waters are……..

37. Metalimnion, the layer in between epilimnion and hypolimnion is also called as……..

38. CH_2O_2 or HCOOH is commonly known as ……

39. Toxic effects that can occur at multiple sites within the body, which includes acute toxicity, subchronic toxicity, chronic toxicity, developmental toxicity, and genetic toxicity, is referred as . ……..

40. It is a branch of biology, chemistry, and medicine concerned with the study of the adverse effects of chemicals (poisons) on living organisms……

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SECTION "B"
[3 Q.×7=21]

Attempt *ANY THREE* questions:

1. List the parameters on which the toxicity of a given substance depends on.

2. How ozone is being destroyed by hydroxyl radical, nitric oxide, chlorine and bromine? Explain with chemical reactions.

3. How one rock changes to other in due course of time? Explain its cyclic relationship.

4. With the help of a graph, discuss the dose-response relationship.

SECTION "C"

5. An air sample is found to contain 0.5% of carbon monoxide. Calculate the concentration of the carbon monoxide of the sample in units of g/m^3 at 25°C and 1 atm pressure considering the molecular weight of CO as 28. [5]

OR

Illustrate the exposure routes of chemicals to blood and lymph system and their excretion.

6. What are the different zones of a lake? Explain with illustrated zones. [5]

OR

Assume that gasoline can be represented by C_8H_{18}. How much oxygen is needed to completely burn this fuel? Express the result in grams of oxygen per gram of fuel.

7. Show the relationship of altitude range, temperature variation and important gases at different atmospheric layers. [5]

8. Eighty test organisms were used in an experiment and twenty-five organisms survived at the end of the experiment. Calculate the mortality rate (in percent). [5]

9. Let atmospheric dry air consists of nitrogen at 28 g/mol, oxygen at 32 g/mol and argon at 40 g/mol, find the molecular weight of the dry air assuming that the atmospheric dry air consist only nitrogen, oxygen and argon. [5]

10. Write short notes on (*ANY THREE*): [3Q.×3=9]
    a. Soil
    b. Biomagnification
    c. Sources of aerosols
    d. Global warming