M.Sc. DEGREE I SEMESTER EXAMINATION IN ENVIRONMENTAL TECHNOLOGY NOVEMBER 2010

ENV/ENB 2103 PHYSICAL PROCESSES IN THE ENVIRONMENT

Time: 3 Hours Maximum Marks : 50

PART - A

(Answer *ALL* questions)

I. Fill in the blanks: (5 x ½ =2 ½)

1. The tide that occurs when the earth, moon and sun are at right angles to each other is called the .....
2. The ..... is the outermost layer of Earth's atmosphere.
3. Rip currents are powerful, channeled currents of water flowing .....
4. If the relative humidity is ....., the capacity for air to hold water is ..... Therefore, the amount of evaporation is ..... and the heat removed from the body is .....
5. At 0^0 latitude, 30^0 latitude, and 60^0 latitude, the surface air pressure tends to be ..... and ..... respectively.

II. State the following is **TRUE** or **FALSE**: (5 x ½ = 2 ½)

1. Sea breezes often act just like cold fronts and can produce severe weather.
2. There is more water in the atmosphere than in glaciers and icecaps.
3. Lightning is the first thunderstorm hazard to arrive and the last to leave.
4. Moist air weighs less than dry air.
5. Rawinsonde gives the wind speed and direction in the vertical atmosphere.

III. Define the following: (5 x 1 = 5)

1. Geological Time scale
2. Ekman Spiral
3. Ebb tide
4. Sea Breeze and land Breeze
5. Upwelling and Down welling

IV. Distinguish between the following: (4 x 1 ½ =6)

1. EI Nino and ENSO
2. Geostrophic winds and gradient winds
3. Primary and secondary pollutants
4. Geostrophic and gradient wind

V. Write short notes on *ANY ONE* of the following: (1x 3 = 3)

1. Thermal structure of the oceans.
2. Climate change and weather

VI. Write an essay on *ANY ONE* of the following: (1 x 6 = 6)

1. Hydrological processes and the water budget of lakes and rivers.
2. Indian Monsoon
3. Explain the composition and vertical temperature profile of the atmosphere. What are the different layers?

PART - B

(Answer *ALL* questions)

(All questions carry *EQUAL* marks)

VII. Choose the most appropriate answer from the following: (10 x ½ =5)

1. The top three gases in the atmosphere are
   (a) Nitrogen, Oxygen and Carbon Dioxide (b) Nitrogen, Argon and Oxygen
   (c) Oxygen, Neon and Argon (d) Helium, Nitrogen, Carbon Dioxide

2. Heat travels though empty space by:
   (a) Evaporation (b) Conduction
   (c) Convection (d) Radiation

3. A sun burn is caused by which method of heat transfer:
   (a) Radiation (b) Convection (c) Conduction

4. During an equinoz, the Sun is directly over what part of the Earth at noon?
   (a) Southern Hemisphere (b) Tropic of Capricorn
   (c) Equator (d) Tropic of Cancer

5. The hydrologic cycle is:
   (a) Evaporation, condensation, precipitation (b) Convection, conduction, condensation
   (c) Rain, sunshine, condensation

6. The brief cloud that forms when you exhale on a cold winter day was formed because of:
   (a) Evaporation (b) Condensation (c) Precipitation

7. The Inter – Tropical Convergence Zone exists because of the convergence of the
   (a) Fronts (b) Trade winds (c) Downslope winds (d) Hurricane winds

8. Strong tropical cyclones in the western North Pacific Ocean are called:
   (a) Hurricanes (b) Tropical storms (c) Cyclones (d) Typhoons

9. The visible portion of the electromagnetic spectrum includes what colors?
   (a) Red, white and blue (b) Red, yellow, green, blue
   (c) Infrared, ultraviolet, blue (c) Green, Purple, Maroon, infrared

10. On average the ..... is the saltiest body of water on the earth
   (a) Great Salt Lake (b) Black Sea
   (c) Dead Sea (d) Saltine Sea

VIII. Write notes on ***ANY FOUR*** of the following: (4 x 2 ½ =10)

1. Climatic zones
2. Atmospheric boundary layer
3. Air pollution episodes
4. Geological formations in India
5. Aquifers
6. Gaussian plume model
7. Global water balance

IX. Elaborate upon ***ANY TWO*** of the following: (2 x 5 =10)

1. Global warming
2. Discuss the effects of Noise pollution on human beings
3. Geological hazards and mitigation
4. Groundwater exploitation and management.

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