7. Gutenberg discontinuity separates the earth's -

    (a)   Crust and Mantle.
    (b)   Core and Mantle.
    (c)   Crust and Core.

8. Laterite is resultant to weathering of -

    (a)   Soils.
    (b)   Rocks.
    (c)   Glaciers.

9. Exfoliation of rocks is due to -

    (a)   mechanical weathering
    (b)   chemical weathering.
    (c)   organic decomposition.

10. Landslides are partially caused by -

    (a)   deforestation.
    (b)   atmospheric pollution.
    (c)   coastal erosion.

VI. **Write short notes on *ANY FOUR* of the following**:-   (4 x 2½ = 10)

1. Saline incursion into coastal areas.
2. Deforestation and erosion.
3. Recharging groundwater.
4. Prediction of earthquakes.
5. Prevention of landslides.
6. Coastal erosion.
7. Role of mangroves in coastal ecosystems.

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

1. Global warming and greenhouse effect.
2. The hydrological cycle.
3. Groundwater pollution and its prevention.
4. Weathering, transportation and deposition of earth's materials.

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M.Sc. DEGREE I SEMESTER EXAMINATION IN
ENVIRONMENTAL TECHNOLOGY
JANUARY 2003

PHYSICAL PROCESSES IN THE ENVIRONMENT

Time : 3 Hours   Maximum Marks: 50

(ANSWER EACH PART IN SEPARATE ANSWER BOOKS)

PART - A
    (25 marks)

I. **Choose the most appropriate answer**:-   (5 x ½ = 2½)

1. Wien's displacement law explains the relationship between -

    (a)   emissive power and temperature of a black body.
    (b)   spectrum of radiation emitted from a black body and its temperature.
    (c)   wavelength of maximum emission from a black body and its temperature.
    (d)   absorptivity and emissivity of a black body.

2. Coldest region in the atmosphere is -

    (a)   troposphere.   (b)   tropopause.
    (c)   mesosphere.   (d)   mesopause.

3. Saturated Adiabatic Lapse Rate (S.A.L.R) is -

    (a) $5.0°C/km.$ (b) $10.0°C/km.$
    (c) $6.5°C/km.$ (d) $1.0°C/km.$

4. Direction of the wind in a cyclone is -

    (a)   clock-wise in the northern hemisphere.
    (b)   anti-clockwise in the northern hemisphere.
    (c)   anti-clockwise in the southern hemisphere.
    (d)   outwards at the surface level.

(Turn Over)

5. "Halo" around the Sun is produced by -

    (a)   Cumulus cloud.   (b)   Cirrus cloud.

    (c)   Cirrostratus cloud   (d)   Cirrocumulus cloud.

II. Name the following:-   (5 x ½ = 2½)

1. The thunder producing cloud.
2. Abbreviation of "incoming solar radiation".
3. The unit to express cloud cover.
4. Up-gliding winds along the slope of a mountain, during daytime.
5. The temperature at which condensation starts in the atmosphere.

III. Define the following:-   (4 x 1 = 4)

1. I.T.C.Z.
2. Albedo.
3. Relative humidity.
4. Lapse rate.

IV. Write short notes on *ANY THREE* of the following:-   (3 x 2 = 6)

1. Gradient motion.
2. Thermal structure of atmosphere.
3. Bergeron process.
4. Surface winds pattent.

V. Write essay on *ANY TWO* of the following:-   (2 x 5 = 10)

1. Indian monsoon.
2. Heat balance of earth-atmosphere system.
3. Air quality modelling.

PART - B   (25 marks)

VI. **Choose the most appropriate answer**:-   (10 x ½ = 5)

1. The outermost portion of the earth's atmosphere is referred to as -

    (a)   Stratosphere
    (b)   Asthenosphere.
    (c)   Exosphere.

2. Global warming is related to the -

    (a)   Mantle heat.
    (b)   Greenhouse effect.
    (c)   Volcanism.

3. Coriolis force refers to the -

    (a)   orbital movement of the Earth.
    (b)   wind forces on the earth's surface.
    (c)   ocean currents.

4. Inter-relationship of surface, ground and atmospheric water denotes the -

    (a)   Water cycle.
    (b)   Life cycle.
    (c)   Hydrological cycle.

5. Porosity of a rock is not necessarily an indicator of its -

    (a)   Specific gravity.
    (b)   Permeability.
    (c)   Pore spaces.

6. Saline incursion into groundwater in coastal areas are mainly due to -

    (a)   over exploitation of groundwater.
    (b)   excessive salinity of seawater.
    (c)   lack of seawalls along the coast.