

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

ENV 2103 PHYSICAL PROCESS 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 0.5 = 2.5)

1. One of the green house gases is -
(a) Ozone. (b) Nitrogen. (c) Carbon dioxide. (d) Argon.
2. Southerly wind can be expressed in terms of "degree" as -
(a) 180° wind. (b) 90° wind. (c) 270° wind. (d) 0° wind.
3. Average atmospheric pressure at the earth's surface is -
(a) 1050 mb (b) 950 mb (c) 1000 mb (d) 1000 bar.
4. Cumulus cloud is a -
(a) high cloud. (b) low cloud. (c) medium cloud.
(d) cloud due to vertical development.
5. Land breeze develops during -
(a) day time. (b) night time. (c) day and night. (d) morning.

7. Gutenberg discontinuity lies between -
(a) core and mantle.
(b) crust and mantle.
(c) crust and core.
8. Laterite is resultant to weathering of -
(a) soil.
(b) rock.
(c) glacier.
9. Exfoliation of rocks is due to -
(a) mechanical weathering.
(b) chemical weathering.
(c) organic decomposition.
10. Coastal erosion is caused by -
(a) monsoon wave set up.
(b) the increased tidal pull in monsoon season.
(c) due to shearing of bottom water by mobile oceanic plates.

VIII. Write notes on any four of the following:- (4 x 2.5 = 10)

- (a) Ekman spiral.
- (b) Deforestation and erosion.
- (c) Groundwater recharge.
- (d) Internal structure of the earth.
- (e) Chief types of landslides.
- (f) Causes of coastal erosion.
- (g) Role of mangroves in the coastal ecosystems.

IX. Elaborate upon any two of the following:- (2 x 5 = 10)

- (a) Hydrograph - construction and application
- (b) Aquifer controls in metamorphic terrains.
- (c) Typical aspects of fluvial landform
- (d) Coastal land zone management.

II. Name the following:

(5 x 0.5 = 2.5)

1. An instrument to measure wind speed.
2. Classification of terrestrial radiation with respect to wave lengths.
3. Unaccelerated motion of air parallel to parallel isobars, in which pressure gradient force and coriolis force are in balance.
4. The cloud, in which water is seen in its three phases simultaneously.
5. The rate of decrease in air temperature with increase in height.

III. Define the following:-

(6 x 1 = 6)

- | | |
|-----------------------------|----------------|
| 1. Isohyet. | 2. Albedo. |
| 3. Coriolis force. | 4. Smog. |
| 5. Wien's displacement law. | 6. Lapse rate. |

IV. Answer the following (any two):

(2 x 1 = 2)

1. Explain the green house effect.
2. Explain the Bergeron's process.
3. Differentiate between land breeze and sea breeze.
4. Write down the names of ten important cloud species.

V. Write short notes on any two:

(2 x 3 = 6)

1. Meteorological factors affecting air pollutants.
2. Gradient winds.
3. Climate of India.

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VI. Write essay on any one of the following:

(1 x 6 = 6)

1. General circulation of the atmosphere
2. Heat balance of the earth-atmosphere system

PART - B

(25 marks)

VII. Choose the most appropriate answer:

(10 x 0.5 = 5)

1. The outer most portion of the earth's atmosphere is referred to as -
 - (a) stratosphere.
 - (b) asthenosphere.
 - (c) exosphere.
2. Global warming is the consequence of -
 - (a) release of radio active heat to the crust.
 - (b) increased volcanism in the post Tertiary.
 - (c) addition of large volumes of green house gases.
3. Coriolis force refers to the -
 - (a) orbital movement of the earth.
 - (b) ocean currents.
 - (c) wind forces on the earth's surface.
4. The flow chart of inter-relationships among surface, ground and atmospheric waters is referred to as -
 - (a) life cycle.
 - (b) hydrological cycle.
 - (c) circulation cycle.
5. Porosity of a rock is not necessarily an indicator of its -
 - (a) specific gravity.
 - (b) permeability.
 - (c) porespace.
6. Saline incursions into coastal aquifers is due to -
 - (a) over exploitation of groundwater.
 - (b) excessive salinity of sea water in summer season.
 - (c) lack of seawalls along the coast.

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