

## B.Tech 1st Semester Exam., 2015

## ENVIRONMENTAL SCIENCE

Time : 3 hours

Full Marks : 70

## Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Choose the correct answer (any seven) :

2×7=14

- (a) The primary air pollutants are
  - ~~(i)~~ sulphur dioxide and nitrogen oxide
  - (ii) ozone and carbon monoxide
  - (iii) sulphur dioxide and ozone
  - (iv) nitrogen oxide and ozone
- (b) Electrostatic precipitator is used as pollution controller for the separation of
  - (i) SO<sub>2</sub>
  - ~~(ii)~~ NO<sub>x</sub>
  - (iii) hydrocarbon
  - (iv) particulate matter

- (c) The most common cause of acidity in water is

- ~~(i)~~ CO<sub>2</sub> akubihar.com

- (ii) O<sub>2</sub>

- ~~(iii)~~ H<sub>2</sub>

- (iv) N<sub>2</sub>

- (d) The process in which chlorination is done beyond the breakpoint is

- (i) pre-chlorination

- (ii) post-chlorination

- (iii) super-chlorination

- (iv) breakpoint chlorination

- (e) The process of corrosion is enhanced by

- (i) air and moisture

- (ii) electrolytes in water

- (iii) metallic impurities and gases like CO<sub>2</sub> and SO<sub>2</sub>

- ~~(iv)~~ All of the above

- (f) Pollutant is

- ~~(i)~~ undesirable foreign matter

- (ii) desirable foreign matter

- (iii) required foreign matter

- (iv) useful foreign matter

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- (g) Smog is mixture of fog and  
(i) gases  
(ii) smoke  
(iii) pollutants  
(iv) oxides
- (h) From the following, identify the metal which cannot pollute environment  
(i) As  
(ii) Pb  
(iii) Pt  
(iv) Hg
- (i) Effect of increasing CO<sub>2</sub> in air is  
(i) heating  
(ii) cooling  
(iii) increasing pollution  
(iv) None of the above
- (j) The depth, in soil below which soil particles are filled with water only, is known as  
(i) water table  
(ii) water layer  
(iii) water quantity  
(iv) depth of water

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2. (a) Define water pollution. Describe different kinds of water pollution and their ecological effects on aquatic life and also on man. 7
- (b) Discuss control of water pollution. Distinguish between point and non-point sources of water pollution. What are major water pollutants and what effect do they have on water quality? 7
3. (a) What are air pollutants? Define air pollution. List five air pollutants commonly released in air. How air pollution affects the life on earth? 4
- (b) Discuss indoor air pollutants with their harmful effects. 3
- (c) Describe briefly how air pollution can be checked. Describe electrostatic precipitator with a neat sketch, with respect to its principle, and mode of operation. 7
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4. (a) Define solid waste. Discuss the classification of solid wastes. 3

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- (b) Mention the most significant property of the city refuse which guides the adoption of each of the following methods of refuse disposal : 4
- (i) Incineration
  - (ii) Sanitary landfill
  - (iii) Composting
- (c) Explain the term composting. Give the different types of composting in use, and describe with the aid of sketches, their working. 7
5. (a) Define noise and explain as to how and why it should be regarded as an environmental pollutant. 4
- (b) Mention typical values of acceptable sound levels as per IS code for the following : 4
- (i) Rural areas
  - (ii) Urban residential areas
  - (iii) City areas
  - (iv) Industrial areas
- (c) Differentiate between continuous noise, intermittent noise and the impulse noise. Explain in brief the major factors and actions that may help in noise abatement in a modern society. 6

6. (a) What do you mean by groundwater? Briefly mention the various zones of groundwater, and point out the importance of the zone of saturation in this connection. 5
- (b) Differentiate between confined and unconfined aquifers. 3
- (c) What are the pollutants, which cause groundwater pollution? Discuss the various mechanisms by which pollutants get transported within. How can groundwater pollution be controlled? 6
7. (a) Differentiate between renewable and non-renewable energy sources. Give suitable examples. 3
- (b) With a suitable sketch, describe the thermal energy generation process. 4
- (c) Describe thermodynamic laws of energy. Give a detailed note of solar energy trapping and its applications. 7
8. (a) Define soil and give a neat sketch of soil profile. Give classification of Indian soils. 5
- (b) Discuss desertification and its causes. Describe food problems in India. What are the main causes of food shortage in India? How can food crisis be prevented? 9

9. (a) Describe the salient features of Environmental Protection Act, 1986. 4
- (b) What do you understand by ecosystem? Describe the various components of an ecosystem, giving suitable example. 5
- (c) Describe toxicological chemistry. Discuss different toxic materials and their effects on human health. 5

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