

Total number of printed pages-4

53 (ES 101) ENEN

2017

**ENVIRONMENTAL AND SAFETY
ENGINEERING**

Paper : ES-101

Full Marks : 100

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

Answer **any five** questions.

1. (a) Describe the three broad classifications of environment. What do you mean by environmental engineering ? 10

(b) Define with examples the renewable, non-renewable and potentially renewable resources. 5

Contd.

- (c) State the Malthusian Growth Model of population dynamics. If India's population according to the census of 1951 and as estimated in 2016 were 0.361 and 1.327 billion respectively, show that the Malthusian Growth rate of the country's population estimated over the last 65 years is 0.02 billion/year. 5
2. (a) Define Food chain and Food web. Depict a food web with the help of a schematic diagram. 5
- (b) Name the biotic and abiotic components of an ecosystem. Explain the role of biotic components in the functioning of *any one* ecosystem. 10
- (c) What are the adverse effects of acid rain? 5
3. (a) Draw a sketch indicating the layers of the earth's atmosphere and variation of temperature from troposphere to exosphere. 5

- (b) Define the conductive, convective and radiation heat transfers in the environment. Name and show in a sketch the components of a single global energy model. 5
- (c) Why is Environmental impact assessment (EIA) for an engineering project important? Describe the different stages of an EIA study. 10
4. (a) Explain the impact of global warming on environment. 10
- (b) What are the causes and effects of Water pollution? 10
5. (a) What are the important primary and secondary air pollutants? Name the governing Act, the central agency and the quality standard for the prevention and control of air pollution in India. What is the importance of designing the height of a chimney for controlling air pollution from industries? 10
- (b) Name the important devices to control particulate pollutants in industries. Describe *any one* device with an indicate sketch. 5

- (c) What are the categories of Municipal Solid Wastes (MSW) ? Name the scientifically managed methods for disposal of MSW. 5
6. (a) Discuss the effects of noise pollution. 5
- (b) What are pesticides and how they are classified ? 5
- (c) Discuss the impact due to ozone layer depletion in Stratosphere. 5
- (d) Discuss in details *any two* water treatment systems. 5
7. Write short notes on : **(any four)** 20
- (a) Nitrogen cycle
- (b) Advantages and disadvantages of sanitary land filling for disposal of MSW
- (c) Anthropogenic factors responsible for changing human-nature relationships.
- (d) The BS Standards for controlling vehicular air pollution in India.
- (e) Kyoto Protocol.