ES–553

Water and Waste Water Treatment

(M. Sc. ENVIRONMENTAL SCIENCE)

(MSCEN–13)

Second Year, Examination, 2017

Time : 3 Hours   **Max. Marks : 60**

Note : This paper is of **sixty (60)** marks containing **three (03)** sections A, B and C. Learners are required to attempt the questions contained in these sections according to the detailed instructions given therein.

Section–A

(Long Answer Type Questions)

Note : Section 'A' contains four (04) long answer type questions of fifteen (15) marks each. Learners are required to answer *two* (02) questions only.

1. Write a detailed note on various parameters of water quality assessment.

2. Define water pollution. Give an account on source of water pollution and types of water pollutant.

3. Write a detailed note on sludge treatment.

4. What are the characteristics of tannery industrial wastes ? Discuss in detail the treatment of tannery industrial waste.

Section–B

(Short Answer Type Questions)

Note : Section 'B' contains eight (08) short answer type questions of five (05) marks each. Learners are required to answer *four* (04) questions only.

1. What is F/M ratio and how is it calculated ?

2. Discuss the criteria of use-based classification of surface water in India.

3. Write a short note on aeration.

4. Discuss in detail about activated sludge.

5. Differentiate between snow sand filters and rapid sand filters.

6. Write in brief about sedimentation.

7. Discuss the design model of sedimentation.

8. Describe in detail about cleaner technologies.

Section–C

(Objective Type Questions)

Note : Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this section are compulsory.

Write True/False against the following :

1. Is Anoxic conditions in deeper lakes is due to algal bloom ?

2. Pure water has conductance.

3. Inorganic nutrients such as fertilizers have no adverse effects on aquatic ecosystems.

4. Heat can lower dissolved oxygen and make fish vulnerable to disease.

5. Presence of *E. coli* in drinking water indicates mixing of sewer water.

Choose the correct answer :

6. The chemical principle in PCBs cause more damage to :

    (a) Thinning of egg shell

    (b) Tissue damage of egg

    (c) Both (a) and (b)

    (d) None of the above

7. Permissible concentration of NO_3 in water by WHO is :

    (a) 50 mg/L

    (b) 45 mg/L

    (c) 40 mg/L

    (d) 47 mg/L

8. Which disease is caused by cadmium ?

    (a) Minamata

    (b) ltai-itai

    (c) Alzhemier disease

    (d) Bronchitis

9. In which year Water (Prevention and Control of Pollution) Act started ?

    (a) 1973

(b)   1976

(c)   1972

(d)   1974

10. During   which   period   Global   Environmental
     Monitoring System initiated monitoring of water
     quality ?

(a)   1972-73

(b)   1977-78

(c)   1973-74

(d)   1976-77

A-98