

**EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2009**

CE 04 803—ENVIRONMENTAL ENGINEERING—II

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

1. (a) What do you mean by variation in flow of sewage ? Explain sewage, average flow, dry weather flow and maximum flow.
- (b) Explain the importance of the following in the design of sewers :—
 - (i) Self cleaning velocity.
 - (ii) Non-scouring velocity.
- (c) State the routine tests carried out in the laboratories at sewage treatment and disposal works, and explain the significance of each of them.
- (d) What is BOD ? Deduce an expression for BOD with time.
- (e) What is self purification of streams ? What are the factors affecting the self purification of polluted streams ?
- (f) What do you understand by digestion of sewage sludge ?
- (g) Explain the solid-waste collection practice and discuss its role in waste management.
- (h) Explain the criteria of pollutants in air-pollution and their sources and effects in detail.

(8 × 5 = 40 marks)

2. (a) Describe conservancy and water carriage systems. What are the relative advantage and disadvantage of two systems?

Or

- (b) Describe briefly and explain the functions of the following :—

- | | |
|---------------------|------------------------|
| (i) Street inlet. | (ii) Leaping weir. |
| (iii) Drop manhole. | (iv) Flushing manhole. |

3. (a) Distinguish between Primary treatment and Secondary treatment. Draw the flow diagram for sewage treatment using activated sludge process.

Or

- (b) A single stage filter is to treat a flow of 3.79 MLD of raw sewage with BOD of 240 mg/l. It is to be designed for a loading of 11086 kg. of BOD in raw sewage per hectare metre, and the recirculation ratio to be 1. What will be the strength of the effluent according to the recommendations of NRC ?

Turn over

4. (a) Write short notes on :

- (i) Sludge digestion.
- (ii) Land application of sewage.

Or

(b) Design a septic tank for the following data :—

- No. of people = 100
- Sewage/capita/day = 120 L
- Desludging period = 1 year
- Length : Width = 4 : 1

5. (a) List adverse health and environmental impacts due to improper handling of solid-waste.

Or

(b) Explain the particulate control techniques in detail.

(4 × 15 = 60 marks)