

SL-253

Total No. of Pages : 2

Seat No.	
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T.E.(Civil) (Semester-VI) (Revised)
Examination, May - 2017
ENVIRONMENTAL ENGINEERING-II
Sub. Code : 66877

Day and Date : Saturday, 06-05-2017

Total Marks : 100

Time : 2.00 p.m. to 5.00 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Assume suitable data wherever necessary and mention it.
 - 3) Figures to the right indicate full marks.

SECTION-I

- Q1) a) Mention the waste water sources and give their characteristics. [4]
b) Comment on the following. [8]
i) COD is more than BOD.
ii) Sewers are laid parallel to ground slope.
iii) Sewers are designed to flow at partial depth.
iv) Sewer design is checked for limiting velocities.
c) Determine the size of circular wet well and BKW of pumps of a sewage pumping station. [6]

Peak flow = 5 MLD, static head = 20m, Length of rising main = 800m, Diameter of rising Main = 250 mm, friction Factor = 0.01, Velocity of flow in rising main = 1.2 m/s

OR

- c) Determine the velocity of flow and discharge for a sewer flowing at 0.7 of its full depth having an invert slope of 1 in 200, Diameter of sewer= 600mm [6]

$$\frac{V}{V_{full}} = 1.14, \quad \frac{Q}{Q_{full}} = 0.7328$$

Manning's Coefficient = 0.013.

P.T.O.

- Q2) a) Explain the process design & operating parameters of activated sludge process. [5]
- b) Design a horizontal flow grit chamber for treating 2 MLD flow. Check the design for horizontal and scour velocity. Size of particles = 0.2 mm, specific gravity = 2.65, settling velocity = 0.02 m/s. [6]

OR

- b) Determine the dimensions of oxidation ditch for treating sewage flow of 7 MLD with initial BOD_5 of 300 mg/L. F/M ratio = 0.1, ML VSS = 3000 mg/L. [6]
- c) Compare standard rate and high rate trickling filters. [5]

- Q3) a) Explain sludge thickening methods. [5]
- b) What is the necessity of secondary treatment for septic tank effluent? Discuss in short secondary treatment methods. [5]
- c) Design an oxidation pond for treating 5 MLD of sewage flow having influent BOD_5 405 mg/L. [6]

OR

- c) Explain the concept of recycling and reuse of sewage. [6]

SECTION-II

- Q4) a) With neat sketch explain the DO sag curve. [5]
- b) Explain the methods of disposal of waste water. [5]
- c) Write a note on Environmental legislation. [6]

OR

- c) Give the Streeter-Phelps equations for DO deficit, critical DO deficit and time of travel. [6]

- Q5) a) Explain the methods of municipal solid waste collection. [5]
- b) Distinguish between aerobic and anaerobic composting. [5]
- c) Draw a neat sketch of municipal incinerator and explain its working. [6]

OR

- c) Explain the concept of sanitary land filling method with advantages and limitations. [6]

- Q6) Write short notes on any three. [18]

- a) Effect of particular matter on man, materials and vegetation.
- b) Plume behavior
- c) Electrostatic precipitator
- d) Global warming