

B.E. Civil

VII - CBS GS

40+40+40+7

140

Env. Engg - II

15-12-16

Q.P. Code : 848602

(3 Hours)

[ Total Marks : 80

- N.B. :** (1) Question No.1 is compulsory  
(2) Attempt any three questions from remaining five questions.  
(3) Assume any suitable data where ever required.  
(4) Figures to the right indicate full marks.

1. Attempt any **four**

20

- What is conservancy system and water carriage system?
- Draw a neat sketch of Drop manhole.
- Why velocity needs to be controlled in grit chamber?
- What is sludge volume index? What is its significance?
- Explain effect of noise pollution with control measures

2. (a) Give classification of air pollutants and control measures for gaseous and particulate matter. 10

(b) Design the dimensions of a septic tank for the following data: 10

No. of People=130

Sewage/capita/day=120lit

Desludging period= 1 year

Length: Width =4: 1

3 (a) Explain with neat sketch the working of a Trickling Filter. What is the principle on which it works? 10

(b) Design a conventional activated sludge plant to treat domestic sewage, given the following data: 10

Population = 36,000

Average sewage flow =180 lpcd

BOD of sewage = 240mg/lit

BOD removed in primary clarifier = 25%

Overall BOD reduction = 85%

Based on the information above, determine

(a) Volume of aeration tank

(b) Aeration period or H.R.T.

(c) Sludge Retention Time

(d) Tank dimensions

TURN OVER

4. (a) Calculate 2 day  $37^{\circ}\text{C}$  BOD of sewage sample whose 5day  $20^{\circ}\text{C}$  BOD is 180mg/lit. Assume  $K_D$  at  $20^{\circ}\text{C}$  as 0.1 10
- (b) Explain the necessity and process mechanism of anaerobic digestion of sludge. How the solid, liquid and gaseous products of digestion are disposed off? 10
5. (a) Design a sewer to serve a population of 35,000; the daily per capita water supply allowance being 160litres, of which 80 percent finds its way into the sewer. The slope available for the sewer to be laid is 1 in 600 and the sewer should be designed to carry four times the dry weather flow when running full. What would be the velocity of flow in the sewer when running full? 10
- (b) Differentiate between one pipe and single stack plumbing system with neat sketch. 10
6. Write short note on (any four) 20
- (a) Natural forces of self-purification
  - (b) Anti-siphonage pipe
  - (c) Oxidation pond
  - (d) Sludge Thickener
  - (e) Sampling of sewage