

B.Tech III Year II Semester (R09) Supplementary Examinations May/June 2017

ENVIRONMENTAL ENGINEERING - I

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Sketch an intake structure and explain its salient features.
- (b) Forecast the population of a town for the year 2050 using geometric increase method.

Year	1950	1960	1970	1980	1990	2010
Population	93000	110000	124000	136000	164000	180000

- 2 (a) The water has to be supplied to a town with a population of 75000 with a per capita consumption of 120 lpcd. Design a circular sedimentation tank assuming the necessary data.
- (b) With a sketch explain the use of dry feeding devices to feed the coagulant to a sedimentation tank.
- 3 (a) Discuss the operating problems of rapid sand filters and suggest remedial measures.
- (b) Define disinfection. Explain the action of chlorine as disinfectant giving chemical equations.
- 4 (a) Sketch and explain the advantages of ring system of water distribution network.
- (b) Explain the procedure of Hardy cross method of designing the distribution system.
- 5 (a) List and explain the characteristics of sewage analyzed to assess the strength of sewage.
- (b) Calculate the diameter of discharge of a circular sewer laid at a slope of 1 in 500 when it is running half full and flowing with a velocity of 2 m/sec. Assume $n = 0.012$ in Manning's formula.
- 6 (a) Sketch any three shapes of sewers used giving their applications.
- (b) Sketch and explain one pipe system of plumbing used in house drainage works.
- 7 (a) Design a high rate trickling filter to treat 2MLD of waste water from a community. Assume the necessary data required for the design.
- (b) With a sketch explain the working of an oxidation pond giving its design criteria.
- 8 (a) Explain the process of sludge digestion. Also explain the factors affecting sludge digestion process.
- (b) Explain the construction and working of a sludge drying bed used for sewage disposal.
