SC-38

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T.E (Civil) (Part-III) (Semester -V) (Revised) Examination, November-2019

ENVIRONMENTAL ENGINEERING-I

Sub. Code :66237

Day and Date : Wendnesday, 27- 11 - 2019 **Total Marks : 100**

Time : 2.30 p.m. to 5.30 p.m.

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

Q1) Answer any three of following. **[3×6=18]**

a) Mention various authorities at international and national level for water quality standards. Explain any 5 quality parameters in India situation.

b) Discuss the various factors on which demand of water is based.

c) Discuss the water sources along with qualities of water.

d) What are the factors considered during design of intake well?

Q2) a) Design a cascade aerator for 10 MLD flow. **[8]**

b) Explain the process of water treatment with flow chart for any two sources. **[8]**

OR

b) How to estimate does of coagulant. Explain the process. **[8]**

Q3) a) What is demineralization? Explain any one process in detail. **[8]**

b) Differentiate between slow sand, rapid sand multimedia and pressure filters. **[8]**

OR

b) Explain the lime-soda and ion exchange processes for water softening.**[8]**

P.T.O.

SECTION-II

Q4) a) Determine the equalizing capacity of service reservoir by analytical method from following data:
Daily demand-20Million Liters
Supply to reservoir-from 6am to 6pm with constant rate pumping
Distribution of demand-

6am to 9 pm-	40% of total
9 am to 12 noon-	20% of total
12noon to 3 pm-	5% of total
3 pm to 6 pm-	10% of total
6 pm to 9 pm-	25% of total

[7]

b) Compare C1 pipe with concrete pipe. **[5]**

c) Explain the forces acting on underground pipes. **[5]**

OR

c) Explain the procedure for pressure and leakage testing of pipes. **[5]**

Q5) a) Explain the various layout patterns of water distribution system with neat sketches. **[5]**

b) Determine corrected flows in the various pipes of a network given below hy Hardy cross method.

Pipe	Length(m)	Diameter (mm)	Friction factor
PQ	300	350	0.048
QR	400	250	0.040
RS	500	300	0.044
SP	600	400	0.052

inflow at P is 1.5 m^3/s and outflows at Q, R, and S are 0.5,0.6 and 0.4 m^3/s respectively. (take one trial only). **[8]**

c) Explain the equivalent pipe method of network analysis.

OR

c) Compare EPANET with water GEMS for network analysis. **[5]**

Q6) Write short notes on (any three) **[3×5=15]**

a) Fire hydrant

b) maintenance of water distribution system

c) Water meters

d) Energy budget