



ROLL NO:

PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Weightage: 20%

Max Marks: 40

Max Time: 1 hr.

Monday, 24th September, 2018

TEST – 1

Odd Semester 2018-19

Course: **CIV 212 Environmental
Engineering**

V Sem. Civil

Instruction:

- (i) Read the question properly and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and Non-programmable calculators are permitted.

Part A

(3 Q x 4 M = 12 Marks)

1. What are the factors affecting the population growth?
2. Write down the requirements of wholesome water?
3. What are the various types of water demand and its IS 1172-1993 recommended limits?

Part B

(2 Q x 8 M = 16 Marks)

4. Mention the types of intake structure and the factors governing the location of an intake.
5. The analysis of water sample are given below. Find out the total hardness, carbonate hardness and non-carbonate hardness.

Ions	Ca ²⁺	Mg ²⁺	CO ₃ ²⁻	HCO ₃ ⁻
Concentration (mg/L)	120	60	90	61

Part C

(1Q (4 + 8) = 12 Marks)

6. **a)** If the average water consumption of a city is 300 lpcd and its population is 40000, what will be the maximum hourly draft of the maximum day and maximum daily draft?
b) In a town, it has been decided to provide 200 lpcd in the 21st century. Estimate the domestic water requirements of this town in the year AD 2000 by projecting the population of the town by incremental increase method:

Year	1880	1890	1900	1910	1920	1930	1940
Population	25,000	27,500	34,100	41,500	47,050	54,500	61,000



**PRESIDENCY UNIVERSITY,
BENGALURU**

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TEST 2

Odd Semester: 2018-19

Course Code: CIV 212

Course Name: Environmental Engineering

Branch & Sem: Civil & V Sem

Date: 27 November 2018

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instruction:

- (i) Read the question properly and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **all** the Questions. **Each** question carries **six** marks. (2x6=12)

1. Define coagulation and list the mechanism's involved in coagulation process.
2. Write a short notes on operational troubles of rapid sand filters

Part B

Answer **all** the Questions. **Each** question carries **eight** marks. (2x8=16)

3. A particle is having a size of 0.025 mm with a specific gravity of 2.65. If the kinematic viscosity of water is $0.01 \text{ cm}^2/\text{s}$, the settling velocity of the particle as per stokes law is?
4. Design six slow sand filter beds from the following data.

Population = 50000 persons

Water demand = 150 liters/person/day

Rate of filtration = 180 liters/hr/m²

L=2B. Assume maximum demand as 1.8 times average daily demand. Also assume one unit out of six will be kept as standby.

Part C

Answer the Question. Question carries **twelve** marks. (1x12=12)

5. A coagulation sedimentation plant clarifies 50 MLD of raw water. The dosage of filter alum required is 16 mg/lit. If the raw water is having an alkalinity equivalent to 5 mg/lit of CaCO₃, determine the quantities of filter alum and quick lime (containing 87% of CaO) required per year for the plant. Given the molecular weights as follows:
Al = 27, S = 32, O = 16, H = 1, Ca = 40, C = 12.



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**PRESIDENCY UNIVERSITY
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SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Odd Semester: 2018-19

Course Code: CIV 212

Course Name: Environmental Engineering

Programme & Sem: CIV & V Sem

Date: 28 December 2018

Time: 2 Hours

Max Marks: 80

Weightage: 40%

Instructions:

- (i) Read the question properly and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **all** the Questions. **Each** question carries **six** marks.

(4Qx6M=24)

1. Define disinfection and what are objectives of disinfection
2. Define the following terms
 - a) Dry weather flow
 - b) Wet weather flow
3. Draw the flow chat for preliminary treatment of waste water
4. Differentiate combined and separate type of sewerage system

Part B

Answer **all** the Questions. **Each** question carries **twelve** marks.

(3Qx12M=36)

5. Explain the following types of chlorination and also mention their suitable conditions
 - a) Plain chlorination
 - b) Pre chlorination
 - c) Post chlorination
 - d) Super chlorination
6. A town with population 50000 supplied water at a rate 200 lpcd. A bleaching powder dose of 2 mg/l containing 35% of chlorine added to water to have a residual chlorine of 0.2 mg/l. Find the monthly bleaching powder requirement in kg also find chlorine demand in kg/day
7. a) With neat diagram explain break point chlorination
b) For a water, the dosage at breakpoint is 1.5 mg/l and residual chlorine at the time is found to be 0.3 mg/l. If cumulative chlorine added is 2 mg/l, the residual chlorine will be

Part C

Answer **both** the Questions. **Each** question carries **ten** marks.

(2Qx10M=20)

8. The five day BOD of waste water has been measured as 600mg/l. If BOD rate constant to the base e is 0.23/day, what is the ultimate BOD of waste water? What proportion of BOD would remain not oxidized after 20 days
9. Design a screen device for a flow of 25MLD with approach velocity 1 m/sec. Assume depth of flow as 0.9 m, size of opening is 25 mm and diameter of bars = 10 mm. Also find the head loss through screen device. The bars are provided with an inclination 60° to horizontal.