

KADI SARVA VISHWAVIDYALAYA
B.E. SEMESTER-V EXAMINATION NOVEMBER-2016

Subject Code: CV502

Date: 11/11/2016

Subject Name: Environmental Engineering-I

TIME: 10:30 A.M. To 1:30 P.M.

Total marks: 70

Instruction:

1. Answer each section in separate Answer Sheet.
2. Use of scientific calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly the options you attempted along with its respective question number
5. Use the last page of supplementary for rough work

Q.1 (A) Match the following: (Per capita demand for an average Indian city)

[05]

A (Use)	B (demand in l/h/d)
1. Domestic Use	1. 55
2. Industrial Use	2. 20
3. Commercial Use	3. 10
4. Public or civic Use	4. 135
5. Losses, wastages, thefts	5. 50

(B) Differentiate between rapid sand filter and slow sand filter.

[05]

(C) The following data have been noted from the census department.

[05]

Year	Population
1950	80000
1960	155000
1970	250000
1980	478000
1990	853000
2000	980000

Calculate probable population in the year 2030 using Arithmetic increase method.

OR

(C) Explain growth of microorganism based on mass of organism.

[05]

Q.2 (A) What is alkalinity? Give application of alkalinity data.

[05]

(B) Write a short note on water born disease.

[05]

OR

Q.2 (A) A water sample had a caustic alkalinity (OH^-) of 80 mg/L, total alkalinity 240 mg/L [05] and total hardness of 300 mg/L all as CaCO_3 . Calculate the various alkalinity present and the amounts of non-carbonic hardness, if any in this sample.

(B) What is potable water? Explain it briefly.

[05]

Q.3 What do you mean by flocculation? Explain it with neat sketch. Design a flocculator [10] to treat a flow of $250 \text{ m}^3/\text{hr}$. Given data: $G=40 \text{ s}^{-1}$, $\mu = 1.0087 \times 10^{-3} \text{ N.s/m}^2$, speed of paddle=4.5 rpm, $C_D=1.8$, $\zeta=1000$

OR

Q.3 Explain working of clariflocculator with sketch. Also list down coagulant used for [10] clariflocculator.

Section-2

- Q.4 (A) Differentiate between suspended, dissolved, colloidal impurities in water. [05]
(B) Which points will you consider while selecting site for sources of water for a water supply scheme? [05]
(C) Define pre chlorination and post chlorination in detail. [05]

OR

- (C) Explain water softening. List down method for removal of temporary & permanent hardness. [05]

- Q.5 (A) Design an intake well for a flow of $0.1 \text{ m}^3/\text{sec}$. [05]
(B) Explain Conveyance of water. Also explain open channel and conduit. [05]

OR

- Q.5 (A) List down method of water distribution. Also explain ring system with neat sketch. [05]
(B) Explain Gravity system of water distribution. [05]

- Q.6 (A) Write a short note on cyclone separator. [05]
(B) What can be prevention measure to control noise pollution? [05]

OR

- Q.6 (A) What are causes of air pollution? [05]
(B) Explain effect of noise. [05]

-----All the Best-----

KADI SARVA VISHWAVIDYALAYA
B.E. SEMESTER-V EXAMINATION NOVEMBER-2015

Subject Code:CV502

Date: 21/11/2015

Subject Name: Environmental Engineering-I

TIME: 10:30a.m. To 1:30p.m.

Total marks: 70

Instruction:

1. Answer each section in separate Answer Sheet.
2. Use of scientific calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly** the options you attempted along with its respective question number
5. Use the last page of supplementary for rough work.

Section-1

- Q.1 (A) Explain any five factors governing the location of intake. [05]
(B) Explain the need of a properly planned water supply scheme for a community. [05]
(C) Explain following terms: (i) Pre-chlorination (ii) Break point chlorination [05]
- OR
- (C) Draw a neat sketch of flash mixer. [05]
- Q.2 (A) Give minimum water demand for domestic purpose per capita per day(lpcd) for [05]
weaker section & LIG colonies in small Indian town and cities and also for full
flushing system of Indian town and cities.
(B) List down chemical parameters of water and explain pH in detail. [05]
- OR
- Q.2 (A) Give difference between Slow sand filter and Rapid sand filter. [05]
(B) Enlist with their role, the different processes involved in water treatment. [05]
- Q.3 (A) Design a plain sedimentation tank for water supply scheme to treat the water 15 MLD. [05]
Take detention time 6 hours. Assume suitable data.
(B) Design clarifier for treating 1.5 MLD flow of water. Assume suitable data. [05]
- OR
- Q.3 (A) Design influent and effluent pipe of clariflocculator for treating 1.2 MLD flow of [05]
water. Assume necessary data
(B) Find area of rapid sand filter for the flow of 10 MLD and Find number of units or bed [05]
required. Assume suitable data.

Section-2

Q.4 (A) Match the following:

A

1. Turbidity
2. Noise
3. Air quality
4. Alkaline
5. Total dissolved solids

B

1. High Volume Sampler
2. TDS meter
3. Jackson meter
4. BOD bottle
5. Sound level meter
6. pH strip

[05]

(B) Explain temperature profile with respect to atmosphere. [05]

(C) Write a short note on Grid iron system. [05]

OR

(C) Give comparison between alum and iron salts as coagulant. [05]

Q.5 (A) What is Air pollution? Explain effect of carbon dioxide. [05]

(B) Describe the method for controlling noise pollution. [05]

OR

Q.5 (A) Give difference between Sound and Noise. [05]

(B) Write a short note on effect of air pollution on human health. [05]

Q.6 (A) Give any five points on importance of microorganism in environment. [05]

(B) Give classification of air pollutants. [05]

OR

Q.6 (A) Give Indian standards for drinking water: [05]

- (i) pH value
- (ii) E-coli
- (iii) Total Hardness
- (iv) Dissolved solids
- (v) Mercury

(B) Find out how much acidic is sample of pH 3.0 compared to pH 9.0 [05]

KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER V THEORY EXAMINATION (NOVEMBER / 2014)

SUBJECT CODE : CV502 SUBJECT NAME : Environmental Engineering - I
DATE: 14/11/2014 TIME: 10:30 TO 01:30 TOTAL MARKS: 70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

Section - 1

Q:1 (All Compulsory)

- (A) Discuss in detail components of environment. 05
(B) Describe classification of sources of water. 05
(C) Explain factors affecting per capita demand in any Indian town or city. 05

OR

- (C) Describe growth curve of microorganism based on mass. 05

Q:2 Answer the following Question.

- (A) Enumerate steps involved in design of economic diameter of rising main. 05
(B) Explain main processes involved in municipal water treatment plant with help of line flow diagram. 05

OR

- (A) Why coagulation is required? Enlist main coagulants involved in water treatment process. 05
(B) Explain the experimental procedure for determining optimum dose of coagulants. 05

Q:3 Answer the following Question.

- (A) Write down main differences between slow sand filter and rapid sand filter. 05
(B) Discuss different methods for removal of hardness for community water supply schemes. 05

OR

- (A) Design numbers, size of each unit and under drainage system for rapid sand filters for 25 MLD (million liters pre day) water requirement. 05
(B) Discuss different methods used for disinfection in city water supply scheme. 05

Section - 2

Q:4 (All Compulsory)

- (A) Draw neat sketches showing layout for different types of water distribution system and explain in brief. 05
(B) Draw a neat sketch showing temperature profile throughout atmosphere and also discuss in brief composition of atmospheric air. 05
(C) Discuss classification of sources of air pollutants. 05

OR

- (C) Write a short note on effects of air pollution on humans. 05

Q:5 Answer the following Question.

- (A) Explain working of electrostatic precipitators with a neat sketch. 05
(B) Write a short note on control measures to prevent noise pollution. 05

OR

- (A) Summarize main sources and discuss effects of noise pollution. 05
(B) Explain with a neat sketch working of cyclone separator. 05

Q:6 Answer the following Question.

- Q.3 Answer the following Question. 05

(A) Prove with help of formula derivation that sedimentation rate is the function of only surface area of sedimentation tank and does not depend on depth of tank or detention time. 05

(B) Write a short note on theory of filtration. 05

OR

(A) Explain effects of air pollution on plants. 05

(B) Design a sedimentation facility for the water supply scheme for town having 1,00,000 population and 150 lpcd demand. Assume suitable data wherever required. 05

QB

- (A) Explain effects of air pollution on plants. 05

(B) Design a sedimentation facility for the water supply scheme for town having 1,00,000 population and 150 lpcd demand. Assume suitable data wherever required. 05

—All the Best —

KADI SARVA VISHWAVIDYALAYA
B.E. (CIVIL ENGINEERING) SEMESTER-V (APRIL- 2015)

Subject Code:CV502
Date: 21/04/2015

Subject Name: Environmental Engineering-I
TIME: 10:30am To 1:30pm
Total marks: 70

Instruction:

1. Answer each section in separate Answer Sheet.
2. Use of scientific calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly** the options you attempted along with its respective question number
5. Use the last page of supplementary for rough work.

Section-1

- Q.1 (A) Explain different phases of microbial growth and draw a neat sketch of microbial growth. (by number and by mass). 05
(B) Give layout of water treatment plant and Explain any two units. 05
(C) Describe industrial water demand. 05
- OR**
- (C) How rate of demand is fluctuating in season, weekly and daily? 05

Q.2

- (A) What is Intake? What point should be kept in mind while selecting site for intake and what factors affects the design of intake structure? 05
(B) What would be the pH of a solution containing 1.70×10^{-8} of hydroxide per liter? 05

OR

- Q.2 (A) Give types of filter and explain any one of it. 05
(B) Discuss theory of plain sedimentation. 05

Q.3

- (A) A city has a population of 50,000 with an average rate of demand of 160 lpcd find area of rapid sand filter and find number of units or bed required. 05
(B) Differentiate between slow sand filter and rapid sand filter. 05

OR

- Q.3 (A) Explain the following terms in relation of disinfection: 05
(i) Pre chlorination (ii) Post chlorination (iii) Double chlorination (iv) De chlorination (v) Break point chlorination
(B) Write short note on theory of flocculation. 05

Section-2

Q.4 (A) Design a plain sedimentation tank for water supply scheme having capacity to 05
treat water = 10 MLD.

(B) Write a short note on River intake and Lake intake 05

(C) What do you mean by temporary and permanent hardness? Describe the 05
method of determination of total hardness in laboratory.

OR

Q.5 (C) Write note on impurities in water. 05

(A) Write a short note on: Mass curve method 05

(B) A town is having 1.5 lakh populations and average daily demand is 125 lpcd. 05
Calculate water requirement to be treated in terms of MLD considering
maximum daily demand is 1.5 times average daily demand.

OR

Q.5 (A) Describe any two devices used for control of air pollution. 05

(B) What is Primary and secondary air pollutants 05

Q.6 (A) Give comparison of merits and demerits of continuous & intermittent system 05
of water supply

(B) What is noise pollution? State the sources of it and list the major effects of 05
noise pollution.

OR

Q.6 (A) Forecast population growth for year of 2021 by means of Geometrical 05
Increase Method.

Year	1951	1961	1971	1981	1991	2001	2011
Population	14000	16500	19800	23600	25500	28000	31000

(B) Enlist different types of pipe used for water supply and explain any two in 05
detail.

-----All the Best-----