Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination May-2024

CE3CO20 Environmental Engineering -I

Programme: B.Tech. Branch/Specialisation: CE

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Recuperation Test is for- **1**

(a) Measurement method of open well yield
(b) Measurement method of tube well yield
(c) Method to find impurities in water
(d) None of these

ii. The infiltration of water into the subsurface is the- **1**

(a) Influent (b) Effluent (c) Discharge (d) Recharge

iii. The pump suitable for lifting water from very deep tube well of the order of 100 to 150 m deep is- **1**

(a) Jet pump (b) Submergible pump
(c) Air lift pump (d) None of these

iv. The valve which allows the flow in one direction is- **1**

(a) Slice valve (b) Reflux valve
(c) Gate valve (d) Air relief valve

v. The rate of filtration in slow sand filters is of order of- **1**

(a) 10-20 litre/meter square /hr
(b) 100 -200 litre/meter square /hr
(c) 3000-4000 litre/meter square /hr
(d) All of these

vi. The efficiency of disinfection by chlorine, in water treatment is increased by- **1**

(a) Decreasing in temperature of water
(b) Increasing in temperature of water
(c) Decreasing the time of contact
(d) None of these

vii. Which is used for measuring the intensity of sound? **1**
(a) Frequency meter
(b) Sound level meter
(c) High volume sampler
(d) None of these

viii. At what decibel instantaneous rupture of membrane happens- **1**
(a) 100 (b) 120 (c) 150 (d) 128

ix. As per the annual report on solid waste management by CPCB Report 2020-2021, how much solid waste generated by Madhya Pradesh per day? **1**
(a) 5000 TPD (b) 8022 TPD (c) 7035 TPD (d) 2000 TPD

x. Select the common methods of solid waste management- **1**
(a) Incineration (b) Composting
(c) Biomethanation (d) All of these

Q.2 i. What is design period in designing water supply scheme? **2**

ii. What are the various factor that affect directly the per capita demand of a town? **3**

iii. The following data have been noted from census department- **5**

Year	1940	1950	1960	1970
Populations	8000	12000	17000	22500

Calculate the probable population in the year 1980, 1990 by Geometrical increase method.

OR iv. Write note on any two- **5**
(a) Compensated losses demand
(b) Comparative graphical method
(c) Logistic curve method

Q.3 i. Give names of plastic pipes which can be used in water supply work. **2**

ii. From a clear water reservoir 4 m deep and maximum water level at 40 m, water is pumped to an elevated reservoir at 75 m at the constant rate of 900000 litre/hr. The distance is 1500 m. Give the economical diameter of rising main and water horse power of the pump. (Use Lea's formula for economical diameter of rising main & assume suitable data if needed) **8**

OR iii. What is various type of intake work? Describe a river intake with the help of neat sketch. **8**

Q.4 i. What is coagulation? **3**

ii. A water has to purify for a town whose daily demand is 9000000 litres /day. Design the suitable sedimentation tank of the water work fitted with mechanical sludge remover. Assume the velocity of flow in the sedimentation tank as 23 cm/min, the detention period is 8 hours and the depth of water is 3.5 m. (Assume suitable data if needed) **7**

OR iii. Explain working of slow sand filter along its sketch. Gives the difference between slow sand filter & rapid sand filter. **7**

Q.5 i. Give the details of ambient air quality standard in respect of noise as per the noise pollution (Regulation and Control) rules 2000. **4**

ii. Explain in detail about the engineering & administrative control techniques for noise pollution. **6**

OR iii. Write short note on- **6**
(a) Noise pollution sources & its measurement
(b) Impact of noise pollution on environment

Q.6 Attempt any two:

i. Discuss the types of solid waste and also explain the characteristics of solid waste. **5**

ii. Explain at least five principles of solid waste management in detail. **5**

iii. Write short note on- **5**
(a) Solid waste treatment & disposal methods
(b) Solid waste management rule 2016

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Marking Scheme

Q.1	i)	Recuperation Test is for **A. Measurement method of open well Yield**	**1**
	ii)	The infiltration of water into the subsurface is the, A. Recharge	**1**
	iii)	The pump suitable for lifting water from very deep tube well of the order of 100 to 150 m deep is A. Air lift Pump	**1**
	iv)	The valve which allows the flow in one direction is A. Reflux Valve	**1**
	v)	The rate of filtration in slow sand filters is of order of, A. 100 -200 litre/meter square /hr	**1**
	vi)	The efficiency of disinfection by chlorine ,in water treatment is increased by A. Increasing in temperature of water	**1**
	vii)	Which is used for measuring the intensity of sound A. Sound Level Meter	**1**
	viii)	At what decibel instantaneous rupture of membrane happens A. 150	**1**
	ix)	As per the annual report on solid waste management by CPCB Report 2020-2021 how much solid waste generated by Madhya Pradesh per day A. 8022 TPD	**1**
	x)	Select the common methods of solid waste management A. All of the above	**1**
Q.2	i.	General Description about design period in designing water supply scheme	**2**
	ii.	At Least Three factor with description for three marks.	**3**
	iii.	2.5 Marks for Calculate the probable population in the year 1980, & 2.5 Marks for 1990 by Geometrical Increase Method	**5**
OR	iv.	2.5 Marks for each detail description	**5**
Q.3	i.	.05 marks for one name	**2**
	ii.	4 Marks On solving up to economical diameter of rising main & 8 marks for calculating WHP.	**8**

OR	iii.	3 Marks for various type of Intake work & 5 Marks for description of a river intake with the help of neat sketch	**8**
Q.4	i.	3 Marks for Definition & general details	**3**
	ii.	7 Marks n solving complete numerical	**7**
OR	iii.	4 Marks for working of slow sand filter along its sketch & 3 Marks for the difference between Slow sand filter & Rapid sand filter.	**7**
Q.5	i.	4 Marks for Complete guidelines (residential ,commercial & silence zone)	**4**
	ii.	4 Marks for engineering & 2 Marks for administrative control techniques for noise pollution.	**6**
OR	iii.	3 Marks for each short notes	**6**
Q.6			
	i.	2 Marks for types of solid waste and 3 Marks for the characteristics of solid waste.	**5**
	ii.	5 Marks for five principle	**5**
	iii.	2.5 Marks for each short notes	**5**