

Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2019
CE3CO02 / OE00024 Water & Waste Water Engineering
Programme: B.Tech. Branch/Specialisation: All

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.

- Q.1 i. Suitable method for forecasting population for a young and rapidly developing city is- **1**
 (a) Arithmetic Increase method
 (b) Geometric mean method
 (c) Simple graphical method
 (d) Comparative graphical method
- ii. The average domestic water consumption per capita per day for Indian city may be taken as – **1**
 (a) 240 lpcd (b) 135 lpcd (c) 270 lpcd (d) 325 lpcd
- iii. The valve which allows the flow only in one direction is – **1**
 (a) Check valve (b) Sluice valve
 (c) Air relief valve (d) Gate valve
- iv. Hand pumps makes use of – **1**
 (a) Centrifugal pumping (b) Reciprocating pumping
 (c) Rotary pumping (d) All of these
- v. Modern Turbidity Meters, working on principle of “Scattering of light” are known as – **1**
 (a) Nephelometers (b) Tintometer
 (c) Spectrophotometer (d) All of these
- vi. Disinfection of water helps in – **1**
 (a) Removing turbidity (b) Removing hardness
 (c) Killing pathogens (d) Complete sterilization
- vii. The minimum and maximum Diameter of sewers generally adopted in design are - **1**
 (a) 15 cm and 100 cm (b) 15 cm and 300 cm
 (c) 25 cm and 450 cm (d) 60 cm and 300 cm

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- viii. Appropriate percentage of water in sewage is- **1**
 (a) 90% (b) 99% (c) 99.9% (d) 100%
- ix. Minimum D.O. prescribed for a river stream to avoid fish kills, is: **1**
 (a) 2 ppm (b) 4 ppm (c) 8 ppm (d) 10 ppm
- x. BOD₅ represent 5days biochemical oxygen demand at a temperature of **1**
 (a) 0°C (b) 20°C (c) 30°C (d) None of these
- Q.2 i. What is springs and Infiltration gallery? **2**
 ii. What are the various types of tube wells? Explain in detail the methods of Drilling the tube well? **3**
 iii. What do you understand by water demand of city and what are the factors which affect the water demand? **5**
- OR iv. While doing a recuperation test, the water level in an open well was depressed by pumping upto 3.0 m. The water raised by 1.5 m within 50 minutes just after stopping the pumping. Determine yield from the well, if the diameter of the well is 2.5 m and the depression head is 3.3 m. **5**
- Q.3 i. What is intake structure? **2**
 ii. Sketch and describe river intake and also explain the factors affecting the site selection for river intake. **8**
- OR iii. Describe with sketch the working of reciprocating and air lift pump. **8**
- Q.4 i. What are the various method of disinfection? **3**
 ii. Explain Rapid sand Filter in detail with Design considerations. **7**
- OR iii. Design a sedimentation tank for a water works, which supplies 1.4*1000000 litres/day water to the town. The sedimentation period is 5 hours, the velocity of flow is 12 cm/minute, depth of water in the tank is 4.0 m assuming allowance of sludge is to be made as 80cm. **7**
- Q.5 i. Give the difference between conservancy system and water carriage system. **4**

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- ii. What are the importance of sewer appurtenances? Explain any two with need sketch. **6**
- OR iii. Write short note on: **6**
 (a) Types of sewer joint
 (b) Construction and maintenance of sewer
- Q.6 Attempt any two:
- i. What are the various method of sewage disposal? Explain in detail. **5**
- ii. Write short note on: **5**
 (a) Oxygen sag analysis
 (b) Self-purification capacity of a stream
- iii. Describe physical, chemical parameters of sewage in detail. **5**

Marking Scheme

CE3CO02 / OE00024 Water & Waste Water Engineering

Q.1	i.	Suitable method for forecasting population for a young and rapidly developing city is-		1
		(b) Geometric mean method		
	ii.	The average domestic water consumption per capita per day for Indian city may be taken as –		1
		(b) 135 lpcd		
	iii.	The valve which allows the flow only in one direction is –		1
		(a) Check valve		
	iv.	Hand pumps makes use of –		1
		(b) Reciprocating pumping		
	v.	Modern Turbidity Meters, working on principle of “Scattering of light” are known as –		1
		(a) Nephelometers		
	vi.	Disinfection of water helps in –		1
		(c) Killing pathogens		
	vii.	The minimum and maximum Diameter of sewers generally adopted in design are -		1
		(b) 15 cm and 300 cm		
	viii.	Appropriate percentage of water in sewage is-		1
		(c) 99.9%		
	ix.	Minimum D.O. prescribed for a river stream to avoid fish kills, is:		1
		(b) 4 ppm		
	x.	BOD ₅ represent 5days biochemical oxygen demand at a temperature of		1
		(b) 20°C		
Q.2	i.	Definition of springs	1 mark	2
		Definition of Infiltration gallery	1 mark	
	ii.	Various types of tube wells	1.5 marks	3
		Methods of Drilling	1.5 marks	
	iii.	Explanation of water demand of city	2.5 marks	5
		Factor affecting the water demand	2.5 marks	
OR	iv.	Determine yield from the well		5
		Yield of well = 2.59 Litres/second for		
Q.3	i.	Definition of intake structure		2

	ii.	Sketch for	3 marks	8
		Describe river intake	3 marks	
		Factors affecting the site selection for river intake	2 marks	
OR	iii.	Working of reciprocating and air lift pump.		8
		Sketch	4 marks	
		Working	4 marks	
Q.4	i.	At least 3 methods of disinfection		3
	ii.	Rapid sand Filter working	5 marks	7
		Design considerations	2 marks	
OR	iii.	Design a sedimentation tank for a water works		7
		Dimensions of tank=36*2.6*4.5 meter		
Q.5	i.	Difference b/w conservancy system and water carriage system		4
		1 mark for each difference	(1 mark * 4)	6
	ii.	Importance of sewer appurtenances	2 marks	
OR		Any two with sketch.	4 marks	6
	iii.	Write short note on:		
		(a) Types of sewer joint	3 marks	
		(b) Construction and maintenance of sewer	3 marks	
Q.6		Attempt any two:		
	i.	Method of sewage disposal	2 marks	5
		Explanation	3 marks	
	ii.	Write short note on:		5
		(a) Oxygen sag analysis	2.5 marks	
		(b) Self-purification capacity of a stream	2.5 marks	5
	iii.	Physical parameters of sewage	2.5 marks	
		Chemical parameters of sewage	2.5 marks	
