U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 22CV4PCENV **Max Marks: 100**
Course: Environmental Engineering I

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

SUPPLEMENTARY EXAMS 2023

			UNIT - I	*CO*	*PO*	**Marks**
1	a)		Enumerate the factors affecting percapita demand.	*CO1*	*PO1*	**10**
	b)		Population data for a city from past census records is given in the following table. Year: 1951, 1961, 1971, 1981, 1991, 2001, 2011 Population: 12000, 16500, 26800, 41500, 57500, 68000, 74100 Forecast the population of city for the year 2031 by (a) Arithmetic increase method (b) Geometric increase method (c) incremental increase method	*CO1*	*PO1*	**10**
			UNIT - II			
2	a)		Explain briefly the factors to be considered in selecting a suitable site for the intake structure.	*CO2*	*PO1*	**7**
	b)		A city has a population of 1,50,000. Water is to be supplied at the rate of 160 lpcd. If the static lift of the pump is 40m, Calculate the BHP of motor. The rising main is 300m long and its diameter is 50cm. Assume that motor efficiency is 85%, pump efficiency is 60%, f= 0.04 and the peak hour demand is 1.5 times the average demand.	*CO2*	*PO 2*	**8**
	c)		With the neat sketch, illustrate economical diameter of rising main.	*CO2*	*PO 2*	**5**
			OR			
3	a)		Briefly explain water borne diseases with control measures.	*CO2*	*PO1*	**7**
	b)		Discuss the health and environmental significance of following parameters with standards. (i) Fluoride (ii) Nitrate (iii) Hardness (iv) Chloride	*CO2*	*PO2*	**8**
	c)		Define MPN. List and explain any one test for the testing of coliform group.	*CO2*	*PO 1*	**5**

			UNIT - III			
	4	a)	Calculate the dimensions of a rectangular sedimentation basin for the following data: Also Check for surface loading rate. Volume of water to be treated = 3MLD ; Detention time= 4 hrs ; Velocity of flow = 10cm/min; working depth of water = 3m .	*CO2*	*PO 3*	**5**
		b)	Enumerate any 5 potential filter troubles in filters	*CO2*	*PO2*	**10**
		c)	Explain briefly any 5 objectives of aeration.	*CO2*	*PO 2*	**5**
			OR			
	5	a)	12MLD water is treated in a treatment plant daily using ferrous sulphate and lime. If the dosage of ferrous sulphate is 10mg/l determine the total quantity of ferrous sulphate and quick lime required daily.	*CO2*	*PO 3*	**5**
		b)	Compare slow and rapid sand filters.	*CO2*	*PO 2*	**10**
		c)	List common coagulants used in water treatment. Enumerate the factors affecting coagulation.	*CO2*	*PO 2*	**5**
			UNIT - IV			
	6	a)	Enumerate any five minor methods of disinfection.	*CO3*	*PO 1*	**10**
		b)	Describe reverse osmosis process of softening of water treatment with merits and demerits.	*CO3*	*PO 2*	**10**
			UNIT - V			
	7	a)	List and with the help of neat sketch illustrate the working and suitability of different water distribution layouts.	*CO3*	*PO 3*	**10**
		b)	Explain the drawbacks of intermittent system of water supply.	*CO3*	*PO 2*	**5**
		c)	Enumerate the techniques of water conservation.	*CO3*	*PO 1*	**5**

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SUPPLEMENTARY EXAMS 2023