Code No: RT32011 **R13** SET - 1

III B. Tech II Semester Supplementary Examinations, November - 2017

ENVIRONMENTAL ENGINEERING – I

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What are the objectives of water supply system?	[3M]
	b)	Explain mass curve method for balancing storage capacity of reservoir.	[4M]
	c)	The analysis of water from a well showed the following results in mg/l: Ca = 65, Mg = 51, Na = 101.5, K = 21.5, HCO_3 = 248, SO_4 = 221.8, Cl = 79.2 Find the total hardness, carbonate hardness and non-carbonate hardness.	[3M]
	d)	Explain the theory of filtration.	[4M]
	e)	Explain break point chlorination.	[4M]
	f)	What are the requirements of distribution system?	[4M]

PART -B

2	a)	What are water borne diseases? Write the control measures.	[4M]
	b)	What do you mean by per capita demand? Explain various factors that affect per capita demand.	[8M]
	c)	What are the variations in rate of demand of water?	[4M]
3	a)	Explain canal intake structure with neat sketch.	[4M]
	b)	In a water supply scheme to be designed for serving a population of 5 lakhs, the storage reservoir is situated 6 Km away from the city and the loss of head from the source to city is 15 m. Calculated the size of the supply main by using i) Hazen – Williams formula taking C_H as 130 ii) Darcy –Weisbach formula taking f as 0.012. Assume maximum daily demand of 210 lpcd and half of the daily supply is to be pumped in 8 hours.	[8M]
	c)	Explain the surface sources of water.	[4M]
4	a)	Explain the importance of chemical and bacteriological analysis of water used for domestic purposes.	[4M]
	b)	Describe the procedure followed in conducting E-coli test.	[8M]
	c)	What are the maximum acceptable BIS limits of i) Turbidity ii) Fluorides iii) Nitrates iv) Hardness in drinking water	[4M]
5	a)	What is the principle of coagulation?	[4M]
	b)	Design a rectangular sedimentation tank to supply water for a population of 50,000 with an assured average supply of 135 lpcd. Detention time of the tank is 4 hours. Assume data needed suitably.	[8M]
	c)	Draw a flow chart for treatment of public water supplies	[4M]

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6	a)	What are major requirements of a disinfectant?	[4M]
	b)	Explain the minor methods for disinfection of water.	[8M]
	c)	Write short note on Reverse Osmosis process.	[4M]
7	a)	What are the functions of distribution reservoir?	[4M]
	b)	Discuss different types of distribution layouts.Mention the merits and de-merits of each layout.	[8M]
	c)	Write short notes on Sluice valve and Pressure-relief valve.	[4M]

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