BTS (C) – VII – 05 – 066 (B)

B. Tech Degree VII Semester Examination, November 2005

CE 701 A/B ENVIRONMENTAL ENGINEERING
(2002 Admissions onwards)

Time : 3 Hours   Maximum Marks : 100

I.	(a)	Explain the factors that affect per capita water demand.	(6)
	(b)	With a neat sketch explain the working of a hand pump.	(7)
	(c)	What is meant by design period? Explain its importance in water supply schemes.	(7)

OR

II.	(a)	Explain how bacteriological quality of drinking water is assessed. What is the standard for bacteriological quality of drinking water?	(8)
	(b)	A water supply scheme is to be designed for a city with a population of 2,20,000. Calculate the design demand for (i) pumps (ii) distribution system. The average per capita demand may be taken as 150 litre.	(6)
	(c)	Write a short note on global environmental issues.	(6)

III.	(a)	Derive an expression for the surface loading rate for a continuous flow sedimentation tank designed to remove discrete particles.	(6)
	(b)	Explain the purpose of aeration in water treatment. What are its limitations?	(6)
	(c)	With a neat sketch explain the working of a rapid sand filter including backwashing.	(8)

OR

IV.	(a)	Explain *any two* methods for removal of hardness in water.	(6)
	(b)	Name three coagulants and explain the reactions involved.	(6)
	(c)	Write short notes on (i) chlorine demand (ii) break point chlorination.	(8)

V.	(a)	Write short notes on (i) Systems of piping (ii) Testing of drains (iii) factors affecting storm water drainage.	(9)
	(b)	What is meant by dry weather flow? Explain the factors affecting DWF.	(5)
	(c)	Explain the principles of house drainage.	(6)

OR

VI.	(a)	Explain the significance of self cleansing velocity and non scouring velocity in the design of sewers.	(5)
	(b)	Write short notes on (i) time of concentration (ii) inverted siphon (iii) ventilation of sewers.	(9)
	(c)	For a small town with a projected population of 30,000 residing over an area of 20 hectares, find the design discharge for the combined sewer. Use the following data : Rate of water supply - 150 litres per capita per day Run off coefficient - 0.4 Time of concentration - 30 minutes	(6)

VII.	(a)	With a neat sketch explain the working of a trickling filter. Explain its applications.	(8)
	(b)	Write a short note on detritus tank.	(5)
	(c)	Explain the important physical, chemical and biological characteristics of sewage.	(7)

OR

VIII.	(a)	Write short notes on (i) sludge treatment and disposal (ii) assimilation capacity of streams.	(8)
	(b)	Explain the working of activated sludge unit.	(6)
	(c)	The 5 - day BOD (20°C) of a waste water was found to be 200 mg/ℓ. Calculate 3 day BOD at 30°C for the sample. $K_{20} = 0.1$ / day.	(6)

IX.	(a)	Enumerate the important air pollutants. Explain the sources of air pollutants.	(8)
	(b)	Write a short note on vehicles used for solid waste collection and transportation.	(6)
	(c)	What are the merits and demerits of incineration for solid waste disposal?	(6)

OR

X.	(a)	Briefly discuss *any two* methods employed for control of gaseous air pollutants.	(6)
	(b)	With a neat sketch explain the working of a cyclone separator for particulate removal.	(6)
	(c)	Write short notes on (i) noise pollution control (ii) solid waste collection system.	(8)

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