Seat No.:			Enrolment No		
				CAL UNIVERSITY	
	Ch:		- II • EXAMINAT	FION – WINTER • 2014	
	•	ect code: 1721802 ect Name: Treatment Proc	ess Design and l	Date: 03-12-2014	
	-	e: 02:30 pm - 05:00 pm	ess Design and	Total Marks: 70	
		ructions:		Total Nation 70	
		<ol> <li>Attempt all questions.</li> <li>Make suitable assumptions v</li> <li>Figures to the right indicate</li> </ol>	<del>_</del>		
Q.1	(a)	With the help of a neat sketch, Cyclone separator		action and working of	07
	(b)				07
Q.2	(a)	Enlist the different types of flow measuring devices and explain any one with a neat sketch.			07
	(b)	wastewater treatment			07
	(b)	OR Define the terms:			
	(0)			Scour velocity Effective size of sand.	U7
Q.3	(a)	23,400 m³/h gas stream at 100 $^{0}$ C. Consider the gas to be air releasing 150g/s of dust. The dust mean diameter is 12 $\mu$ m and $p_p = 1500 \text{ kg/m}^3$ (a) Determine dimensions of components of cyclone. (b) Determine pressure drop through cyclone. Take $\mu_g = 2.1 \times 10^{-5} \text{ kg/m-s}$ .			14
Ω3	OR  (a) Air at 77°C passes through fabric filter for a period of 5h 24 minutes, after wh				14
Q.3	(a)	the total pressure drop is measured as 1.18 kPa. The filter cake density is 1280 kg/m³, and the residual pressure drop across the cleaned filter before the test is 137 Pa. The air velocity is 1.28 m/min, during the test and the initial dust loading is 32 g/m³. Estimate the permeability K <sub>p</sub> of the dust layer in units of square meter.			14
Q.4	(a)	Design a clariflocculator for a flow of 10 MLD.  OR			14
Q.4	(a) (b)	Enlist the various modifications of Activated Sludge Process and explain any two. Differentiate between Rapid Sand Filter and Slow sand Filter giving at least seven points of difference.			07 07
Q.5	(a)	Design a ASP process for a flo following data:	ow of 500 m3/d wit	500 m3/d with inlet BOD of 300 mg/L.Assume 1	
			S=2500mg/L Γ =8 days	Kd= 0.15	
Q.5	(a)	(1) Highlight the benefits of eq	OR nualization.		08
~.··	(b)	(2) Enlist the types of aeration system and explain any one type with sketch.			06