Question Paper

Exam Date & Time: 30-May-2023 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.TECH END SEMESTER EXAMINATIONS, MAY 2023

ENVIRONMENTAL POLLUTION CONTROL ENGINEERING [CHE 4055]

Marks: 50

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

1)	۸)	"In an unpolluted natural environment, the nutrient cycles operate in a balanced state thereby contributing the stability of whole Biosphere". Justify the statement by elaborating the dynamics of any one of the natural cycles	(4)
	A)		
	B)	Elaborate on the salient features of Indian pollution prevention and control legislation	(4)
	C)	Differentiate TTS and NIPTS in noise pollution	(2)
2)		With a neat sketch of sampling train, explain the necessary precautions for gaseous and particulate sampling	(4)
	A)		
	B)	What do you understand by monitoring of air pollutants. With a neat flow sheet, explain Chemiluminescent technique to monitor NO- NO ₂ emissions in the atmosphere	(4)
	C)	Explain the objectives of sampling and measurement of air and water pollutants	(2)
3)		Compare and contrast between activated sludge process and activated carbon adsorption in waste water treatment	(4)
	A)		
	B)	"Fundamentals of Chemical Engineering are essential for the design of particulate collection equipment". Justify the statement and deduce an equation for collection efficiency of a Howard settling chamber in terms of volumetric flow of the effluent gas stream 'Q', number of trays 'n', width 'W' and length 'L' of the tray, terminal settling velocity V _t assuming the laminar flow condition	(4)
	C)	Differentiate between smog and phytochemical smog	(2)
4)		"Even though the total discharge of contaminants in the atmosphere in a given area remains constant from day to day, the degree of air pollution may vary widely because of differences in	(4)
	A)	meteorological conditions". Justify the statement by elaborating the effect of meteorological factors on the degree of air pollution	
	B)	Explain the flaring and catalytic combustion techniques for control of gaseous pollutants	(4)
	C)	Differentiate between epidemiological and toxicological studies of air pollution	(2)
5)		What are the characteristics of effluents generated from a nitrogenous fertilizer plant? Explain the methods of control and abatement of pollution in this plant	(4)

Duration: 180 mins.

A)

B)	What are the different processes available for control of SO ₂ ? Elaborate on any two methods in	(4)
	detail	

C) Compare and contrast between particulates and gaseous pollutants

(2)

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