Duration:-03 Hrs **Marks: 80**

N.B:-

1) Question **No 1** is compulsory
2) Attempt **any three** questions from the remaining **five** questions
3) Assume suitable data wherever necessary
4) Figures to the right indicate full marks.

Q.1] Write short notes **(any four)** 20

a) Carbon cycle
b) Microorganism growth kinetics
c) Trickling filter
d) Ozone Depletion
e) High Volume sampler.

Q.2] a) Discuss the various types of solid wastes. 10
b) Discuss in brief sludge treatment and disposal 10

Q.3] a) The following BOD results are observed for a sample of raw sewage at 20°C.

Time in Day (t)	0	1	2	3	4	5
BOD in mg/lit (y)	0	65	110	140	160	170

Calculate reaction rate constant and ultimate BOD. 10

b) Explain with neat sketch the function of Facultative pond. 10

Q.4] a) What is Noise Pollution? Explain its causes, consequences & abatement methods. 10
b) Explain with neat sketch the ventury scrubber . 10

Q.5] a) Explain in brief in effects of water pollutants on human health. 10
b) A chimney with design stack height of 250 m is emitting sulphur dioxide at a rate of 500 gm/sec on a sunny day in June with moderate wind speed at the stack altitude. Estimate the concentration of sulphur dioxide downwind for the following situation: 10

a) $<\rho so_2>$ {1000, 0, 0,250}
b) $<\rho so_2>$ {1000, 50, 0,250}
c) $<\rho so_2>$ {1000, 50, 20,250}
d) If $<\rho so_2>$ {1000,y ,0, 250} is 100 $\mu g/m^3$,what is the value of y in meters?

Given : A= 0.295 , B=0.119 ,p=0.986

Q.6] a) Explain DO Sag curve and Critical Oxygen deficit? 10
b) Discuss the design criteria for Activated Sludge Process in detail. Derive the necessary derivation for volume of Aeration tank. 10

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