B.Tech. Degree VIII Semester (Supplementary) Examination, September 2006

CE 803 A/B (D) INDUSTRIAL WASTE ENGINEERING AND MANAGEMENT
(2002 Admissions)

Time: 3 Hours   Maximum Marks: 100

(All questions carry **_EQUAL_** marks)

I   .a)   What is meant by industrial pollution?
        b)   Explain the effects of industrial waste discharge on streams.

<div align="center">OR</div>

II   Explain in detail:
              (i)   Strength reduction techniques
              (ii)   Equalization of wastes

III   a)   What are the assumptions made while deriving Streeter Phelps equation?
       b)   Develop a dissolved oxygen sag curve and find the time at which dissolved oxygen of the stream reaches minimum value.

Initial ultimate BOD	=	47.4 mg/l
Initial dissolved oxygen deficit	=	1.05 mg/l
K_1@ 25°C	=	0.29/day
K_2@25°C	=	2.8/day

<div align="center">OR</div>

IV   Write **_short note_** on:
              (i)   Ocean disposal
              (ii)   Assimilation capacity of stream
              (iii)   Deoxygenation and Reoxygenation rates
              (iv)   Reuse of waste water

V   a)   Explain how waste treatment can be achieved using ion exchange and reverse osmosis.
        b)   Explain the principle of activated sludge process.
        c)   Explain the various types of activated sludge process with sketches.

<div align="center">OR</div>

VI   a)   With the aid of a neat sketch explain the different functional components of a sedimentation with coagulation unit.
       b)   Write note on fluidized bed reactor and UAB.

VII   a)   With a flow chart explain the pulp and paper mill process.
       b)   Describe the characteristics and methods for treating tannery wastes.

VIII   Explain the characteristics of the waste water from the following industries:
              (i)   Pharmaceutical plant   (ii)   Sugar Mill
              (iii)   Fertiliser plant

IX   Discuss the following mechanism used for removal of particulate matter in detail.
              (i)   Gravitational settling
              (ii)   Centrifugal impaction
              (iv)   Inertial impaction
              (v)   Direct interception
              (vi)   Diffusion

<div align="center">OR</div>

X   a)   Explain how bio filteration controls volatile organic compound emissions.
        b)   Explain environmental management through ISO 14000.

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