Exam No: _____

GANPAT UNIVERSITY

B.TECH.(CIVIL) SEM-VI

CBCS REGULAR – APRIL-JUNE 2017

2CI605 ENVIRONMENTAL ENGINEERING - II

TIME: 3 HRS TOTAL MARKS: 60

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.
(2) Figures on right indicate marks.
(3) Be precise and to the point in answering the descriptive questions.

SECTION: I

Q.1(A) What is Kjendahl and albuminoid nitrogen? (05)

Q.1(B) Calculate 1 day 37°C BOD & 3 day BOD at 15°C of sewage sample whose 5 days 20°C BOD is 100 mg/L. Assume K_D=0.1 at 20°C. (05)

OR

Q.1(A) Explain the different types of solids present in water. (05)

Q.1(B) Assuming Suitable Design Criteria, Design a Grit Chamber for the flow of 36 MLD. (05)

Q.2 An average operating data for conventional activated sludge treatment plant is as given: (10)

- Wastewater flow = 25000 m^3/day
- Volume of aeration tank = 6000 m^3
- Influent BOD = 208 mg/l
- Effluent BOD = 25 mg/l
- MLSS conc. Xt = 3000 mg/l
- Effluent suspended solids Xr = 50 mg/l
- Waste sludge suspended solids = 8000 mg/l
- Quantity of waste sludge = 195 mg/l

Based on the information above, determine.

a. Aeration period.
b. F/M ratio (kg BOD per day / kg MLSS).
c. Percentage efficiency of BOD removal.
d. Sludge age (days).
e. Quantity of return sludge.

OR

Q.2(A) Explain the design and working of Trickling filter with neat sketch. (05)

Q.2(B) Assuming Suitable Design Criteria, Design a Screen Chamber for the flow of 33MLD. (05)

Q.3(A) Describe the following terms: (05)
TOC, TSS, TDS, TVS & TFS.

Q.3(B) Discuss sludge dewatering process with neat figure. (05)

SECTION: II

Q.4(A) Define Air Pollutant. And Classify various types and its sources of air pollutants. (05)

Q.4(B) Describe oxygen deficit, de-oxygenation and re-oxygenation curve. (05)

OR

Q.4(A) Describe Drop manhole, cleanout and Inverted siphons with neat sketches. (05)

Q.4(B) A city discharged 2000 liters per second of sewage into a stream whose minimum rate of flow is 5000 liters per second. The temperature of sewage as well as water is 20° C. the 5 day BOD at 20° C for sewage is 350 mg/l and that of river water is 2 mg/l. The DO content of sewage is zero, and that of stream is 90% of the saturation DO. If the minimum DO to be maintained in the stream is 4.8 mg/l. find out the degree of treatment required. Assume the de-oxygenation coefficient as 0.1 and re-oxygenation coefficient as 0.3. [saturation DO at 20° C is 9.17mg/l] (05)

Q.5(B) Discuss briefly separation of recyclable materials. (05)

Q.5(A) What are the advantages and disadvantages of combined sewerage system? (05)

OR

Q.5(A) Define the following terms : (05)
Aerosol , Point Source, Line Source, Area Source & Primary Air Pollutant.

Q.5(B) Discuss disposal into lakes, sea-water and land. (05)

Q.6 Write a short note on: (any Two) (10)

A. Transportation facility in solid waste management.
B. Lampholes &Clean-outs
C. Incineration.
D. Methods of disposal of solid waste.

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