

Marks- 80

Duration- 3 Hrs.

- N.B.:
- 1) Question **number one** is **compulsory**.
 - 2) Attempt **any three** of **remaining five** questions.
 - 3) Assume **suitable** data **if required**.
 - 4) Draw **neat sketches** wherever **necessary**.

Q.1. Solve any four of the following: (20)

- A) Explain self purification of streams
- B) Give the differences between aerobic and anaerobic processes
- C) Draw a flow sheet for conventional sewage treatment plant with trickling filter.
- D) What is BOD? How BOD differs from COD?
- E) Explain effects of noise pollution with control measures.

Q.2.A) Design the dimensions of a septic tank for a colony of 250 persons (10)

provided with an assured water supply from the municipal head-works at a Rate of 100 liters per person per day. Assume any data if required.

B) Explain causes, effects and control measures of air pollution. (10)

Q.3.A) Calculate the discharge of 1.5m circular sewer laid at a slope of 1 in 400, (10)

When it is running half full. Assume n in manning's formula as 0.011.

B) Explain the process mechanism of trickling filter with neat sketch. (10)

Q.4.A) The results of a BOD test of a waste sample are as given: 5 ml waste (10)

Sample in 300 ml bottle. Initial DO=7.8 mg/lit and 5-day DO=4.8 mg/lit.

Find d -day BOD and ultimate BOD. Assume $k=0.10$ per day.

B) Enlist different types sewer appurtenances. Explain any two with neat sketches. (10)

Turn Over

Q.5.A) Enlist different types of traps in plumbing. Explain any two with neat sketches. (10)

B) Following is the data for activated sludge process:- (10)

I) Flow 3 MLD

II) BOD₅ of raw sewage 250 mg/lit

III) Dimension of aeration tank 25m long X 8m wide X 4m liquid depth

IV) MLSS to be maintained 2250 mg/lit

V) SVI 100 ml/lit

Compute F/M, HRT and BOD loading.

Q.6. Write short note on (any four) (20)

I) Methods of disposal of sewage

II) Crown corrosion

III) Combined & separate system of sewerage.

IV) Factors controlling sludge digestion

V) Sampling of sewage.
