UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, December 2020

Course: Environmental Engineering **Semester: V**
Program: B.Tech (Civil Engineering) **Time 3 hrs.**
Course Code: CIVL 3055 **Max. Marks: 100**

Instructions: All questions are compulsory to attempt.

SECTION A (30 Marks)

S. No.	Question	Marks	CO
Q 1.	The important five primary pollutants are _____, _____, _____, _____ and _____.	5	CO3
Q 2.	Characterize the two different noise rating systems.	5	CO3
Q 3.	Define the term "Water Supply Scheme" and enlist its various components.	5	CO1
Q 4.	Define the term "Sewerage System" and enlist its various components.	5	CO1
Q 5.	The four constituents/components of a refuse are _____, _____, _____ and _____.	5	CO4
Q 6.	Define Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD).	5	CO2

SECTION B (50 Marks)

Q 7.	A circular sedimentation tank fitted with standard mechanical sludge remover equipment is to handle 5.5 million liters per day of raw water. If the detention period of the tank is 5 hours and the depth of the tank is 3.5 m, calculate the diameter of the tank.	10	CO2
Q 8.	Explain the Controlled Tipping and Composting methods for municipal solid waste disposal with their key points.	10	CO4
Q 9.	Define the term "sound pressure level". Determine the average sound pressure level for various sound pressure levels of 50 dB, 60 dB, 72 dB and 80 dB occurring at a place for a given time period.	10	CO3
Q 10.	Design a suitable rectangular sedimentation tank for a proposed sewage treatment plant of a city, provided with an assured average water supply of 12 Mld. Assume suitable data and figures where needed in accordance with design guidelines	10	CO5
Q 11.	Analyze the term "Inversion" with regard to atmospheric stability. Also state its types along with their critical points.	10	CO3

SECTION-C (20 Marks)

Q12.	A city is having a population of 120000 and average daily water demand of 110 lpcd. Design a rapid sand filter unit for the above city requirement with details of under drainage system and back water washing including wash water gutter arrangement. Assume suitable data and figures wherever needed according to design guidelines. OR Design a sanitary sewer to serve a population of 1,00,000 with the daily per capita water supply allowance of 140 liters. The slope available for the sewer to be laid is 1 in 800 with n=0.013. The dry weather flow may be taken as 1/3 of the maximum discharge and proportionate velocity is 0.90 m/sec during dry weather flow. A self-cleansing velocity of 0.8 m/sec is to be developed	20	CO5