**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **4BT7169** | Roll No. | Total Printed Pages: 1 |
| **4BT7169** |  |
| B. Tech. IV Year VII- Semester (Main/Back) End Semester Examination, November 2022  **(CV)** | |
| **BCV07101 : Environmental Engineering -II** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2.------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** |  | Write a note on various properties of wastewater? | **(12)** | **Apply** |
|  |  | **OR** |  |  |
| **Q.2** |  | Explain the following in details:   1. Role of environmental engineer in daily life 2. Sewage, sullage, sewerage, and domestic sewage | **(2×6)** | **understand** |
|  |  | **UNIT-II (CO2)** |  |  |
| **Q.3** |  | Describe in brief various types of water carriage system, stating advantages and disadvantages of each. | **(12)** | **Apply** |
|  |  | **OR** |  |  |
| **Q.4** |  | A 60 cm diameter sewer is required to flow at 0.4 depth on a grade ensuring a degree of self-cleaning equivalent to that obtained at full depth at a velocity of 85 cm/sec. Find the required grade, associated velocities and rates of discharge at full/depth is 0.4 depth. Take a uniform value of N= 0.015 at all depth of flow | **(12)** | **Evaluate** |
|  |  | **UNIT-III (CO3)** |  |  |
| **Q.5** | **(a)** | What do you understand about grit chamber? Also explain the design steps of grit chamber. | **(8)** | **understand** |
|  |  |  |  |  |
|  | **(b)** | Design a grit chamber to remove particle of size 0.2 mm, G= 2.65, Vs = 0.016 to 0.022 m/s. a flow through velocity of 0.3 m/s will be maintained by proportioning weir. Determine the channel dimension for max flow of 10,000 m3/d. | **(4)** | **Evaluate** |
|  |  | **OR** |  |  |
| **Q.6** | **(a)** | What do you understand about trickling filter? Also explain the design steps of trickling filter. | **(8)** | **understand** |
|  |  |  |  |  |
|  | **(b)** | Design a high rate single stage trickling filter for treating domestic sewage flow of 8 MLD using NRC formulae.  BOD of raw sewage = 240 mg/l.  BOD of removal during primary treatment = 30%  Organic loading rate = 0.8 Kg/m3d  Hydraulic loading rate = 15 m3/m2d  Recirculation ratio = 2 | **(4)** | **Evaluate** |
|  |  | **UNIT-IV (CO4)** |  |  |
| **Q.7** |  | What are different types of sanitary fitting? Explain each of them with proper diagram | **(12)** | **Apply** |
|  |  | **OR** |  |  |
| **Q.8** | **(a)** | Explain general principles governing the design of a sanitary plumbing system | **(6)** | **understand** |
|  |  |  |  |  |
|  | **(b)** | Explain different types of traps depending upon their shapes with diagram. | **(6)** | **Apply** |
|  |  | **UNIT V (CO5)** |  |  |
| **Q.9** |  | What do you understand by plume behaviour? Explain different types of plume with proper diagram. | **(12)** | **understand** |
|  |  | **OR** |  |  |
| **Q.10** |  | Explain the following in details:  (i) Effects of noise pollution. (ii) Noise rating system with examples | **(2×6)** | **Apply** |