KATHMANDU UNIVERSITY
End Semester Examination
March, 2025

Marks Scored:

Level : B.E.
Year : I
Course : ENVE 101
Semester : II
Exam Roll No. :
Time: 30 mins.
F. M. : 20
Registration No.:
Date : 04 APR 2025

SECTION "A"
[20 Q. × 1 = 20 marks]

Choose and encircle the most appropriate option.

1. Which unit is **NOT** used to measure the concentration of dissolved solids in water?
   a. mg/L b. kg/m^3 c. ppm d. kg/day

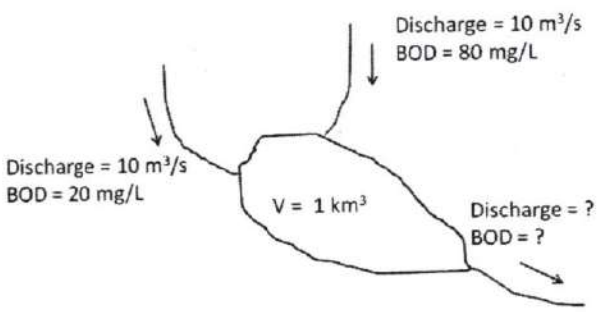
2. What does Hydraulic Retention Time (HRT) in water or wastewater treatment indicate?
   a. Total energy required for treatment
   b. Maximum flow rate of wastewater
   c. Average time water spends in a treatment unit
   d. Efficiency of sedimentation tanks

3. Which of the following is **NOT** an environmental study level as per Nepal's Environmental Protection Rules (EPR)?
   a. Brief Environmental Study (BES)
   b. Initial Environmental Examination (IEE)
   c. Environmental Impact Assessment (EIA)
   d. Advanced Environmental Study (AES)

4. Which hydrological process is responsible for replenishing groundwater reserves?
   a. Evaporation b. Infiltration c. Runoff d. Condensation

5. The annual runoff from the catchment of 2000 ha if the annual precipitation is 1400 mm and annual evapotranspiration is 800 mm is _____ m^3.
   a. 12×10^6 b. 1.2×10^6 c. 44×10^6 d. 4.4×10^6

6. The BOD in the lake output in the figure shown below is:
   a. 50 mg/L b. 5 mg/L c. 60 mg/L d. 100 mg/L



7. What is the main function of a purge stream in a chemical process?
   a. To maintain the reaction temperature
   b. To remove unreacted residue and prevent accumulation
   c. To reduce the reaction pressure
   d. To increase the concentration of reactants

8. In water treatment, _____ is used to kill harmful microorganisms before distribution.
   a. Filtration b. Aeration c. Chlorination d. Screening

9. The estimated arithmetic populations of a city after 20 years will be_____ if average population growth is 10,350 and the population of the base year is 74100.
   a. 84,450 b. 95,000 c. 138,000 d. 74,100

10. Which of the following gives decreasing order of sewer size (in terms of diameter)?
   a. House>Laterals>Mains>Outfall b. Outfall > Mains > Laterals >House
   c. House >Laterals >Outfall>Mains d. Outfall>Laterals>Mains>House

11. A city's wastewater treatment plant processes 10,000 m^3 of wastewater per day. If the concentration of suspended solids is 100 mg/L, how much total solids do the plant process each day?
   a. 500 kg b. 10 kg c. 100 kg d. 1000 kg

12. Which of the following is a biological wastewater treatment process?
   a. Coagulation b. Sedimentation
   c. Activated Sludge Process d. Filtration

13. According to Monod kinetics in wastewater treatment, what happens when substrate concentration (S) is very high?
   a. Microbial growth rate remains constant
   b. Microbial growth rate decreases
   c. Microbial growth rate reaches maximum
   d. Microbial growth rate stops completely

14. What does the Air Quality Index (AQI) measure?
   a. The total volume of air pollutants
   b. The cleanliness or pollution levels in the air
   c. The effects of air pollution on ecosystems
   d. The concentration of oxygen in the atmosphere

15. Which of the following is **NOT** considered one of the six "criteria" air pollutants?
   a. Carbon monoxide
   b. Lead
   c. Hydrogen peroxide
   d. Sulfur oxides

16. What is the purpose of an electrostatic precipitator (ESP)?
   a. To filter out coarse dust particles
   b. To remove fine particulate matter from air
   c. To regulate carbon monoxide emissions
   d. To neutralize sulfur oxides in the air

17. The sound power level results from combining the 65 dB, 60 dB, and 70 dB is _____.
a. 72 b. 75 c. 70 d. 65

18. The solid waste generated from city of 25,000 people at the rate of 2 kg/capita/day is forwarded to a landfill of an area 50 m^2. If the daily waste covers 4 m depth of the landfill, the typical density of solid waste is _____ kg/m^3.
a. 500 b. 250 c. 2000 d.5000

19. A Functional Unit is _____.
a. A quantified description of the performance of the product systems.
b. Description of material and energy flows.
c. Critical balance of supplies.
d. Defines how big a part of product life cycle will be.

20. Which of the following is **NOT** the product life cycle phase?
a. Raw material extraction b. Manufacture and use
c. Inventory d. End of life