KATHMANDU UNIVERSITY
End Semester Examination
March, 2025

Marks Scored:

Level : B.E.
Year : I

Course : ENVE 102
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date : 21 MAR 2025

SECTION "A"
[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate answer.

1. What is the basic SI unit of volumetric flow rate?
   a. Parts per millions (ppm)
   b. Cubic meter per second (m^3/s)
   c. Gram per Liter (g/L)
   d. Kilogram per second (kg/S)

2. In engineering calculations, why are approximations often used?
   a. Because engineers do not need precise measurements
   b. To avoid the need for detailed mathematical analysis
   c. Engineers avoid approximations as they reduce accuracy
   d. To provide quick and reasonable estimates

3. What is the main function of the Nepal Engineering Council (NEC)?
   a. To provide financial support for engineering projects
   b. To regulate and license engineers in Nepal
   c. To import the engineering materials
   d. To regulate the salaries of engineers in Nepal

4. A cube has a side length of 1 cm. What is its volume in liters?
   a. 0.0001 L b. 0.001 L c. 0.01 L d. 1 L

5. What is the correct formula for calculating mass flow rate?
   a. Concentration multiplied by volumetric flow rate
   b. Mass multiplied by time
   c. Volume divided by time
   d. Pressure multiplied by area

6. The mass balance equation for non-steady state conservative system is _____
   a. Input = Output
   b. Accumulation = Input - Output
   c. Input = Output + KCV
   d. Accumulation = Input- Output

7. A city has a projected population of 60,000. The design discharge for the separate sewer line by assuming rate of water supply of 250 lpcd (Peak factor =3) and out of this total supply, only 80% reaches in sewer as wastewater _____ m^3/s.
   a. 4 b. 0.4 c. 40 d. 14

8. A wastewater treatment plant discharges wastewater at a flow rate of 1.5 m^3/s with a solids concentration of 20 mg/L. The total amount of solids discharged by the plant per day in kilograms (kg) is _____
   a. 260 b. 2600 c. 26 d. 2.6

9. Which of the following sewer has the largest diameter?
   a. Outfall b. Branch c. Laterals d. Trunk

10. Air quality standards are_____.
    a. Measure of how clean or polluted the air is.
    b. Presence of contaminants in the atmosphere.
    c. Devices that work to prevent a variety of different pollutants.
    d. Acceptable threshold level of air pollution

11. What does PM stand in context of air quality?
    a. Particulate matter
    b. Pollution measurement
    c. Pressure measurement
    d. Pollutants matter

12. The plate area for an 98% efficient electrostatic precipitator with drift velocity of 0.117 m/s for treating 200 m3/s of flue gas of an plant is _____ m2.
    a. 7880
    b. 6690
    c. 6000
    d. 1190

13. In which the following solid waste collection system house holder does not get involved.
    a. Alley Collection System
    b. Set out System
    c. Door to Door Collection System
    d. Set-out and Set-back Collection System

14. Which of the following is **NOT** goal of Life Cycle Assessment (LCA)?
    a. Identify the alternative product
    b. Minimize Pollution
    c. Reduce cost of production
    d. Maximize recycling

15. That is considered nice to have by the customers preferences and therefore does not affect product substitutability is called ____.
    a. Alternative product
    b. Obligatory properties
    c. Functional unit
    d. Positioning properties

16. What is the purpose of an environmental assessment in engineering projects?
    a. To estimate the financial cost of a project
    b. To evaluate the environmental impacts of a project
    c. To measure the productivity of engineers
    d. To compare different engineering fields

17. What is the purpose of a dose-response assessment in risk analysis?
    a. To identify the total population at risk
    b. To measure the economic cost of a disaster
    c. To assess how toxicity affects an organism at different exposure levels
    d. To assess the probability of an earthquake occurring

18. The energy balance equation for a closed system is _____.
    a. $\Delta H+\Delta KE+\Delta PE = Q- W_{shaft}$
    b. $\Delta H+\Delta KE+\Delta PE = Q- W$
    c. $\Delta U+\Delta KE+\Delta PE = Q- W$
    d. $\Delta U+\Delta KE+\Delta PE = Q- W_{flow}$

19. The capacity to recover quickly from disasters is _____.
    a. Resilience
    b. Preparedness_____
    c. Degree of susceptibility
    d. Vulnerability

20. Which of the following is an example of a climate change mitigation strategy?
    a. Increasing deforestation to create more farmland
    b. Ignoring pollution levels and focusing on economic growth
    c. Increasing the use of fossil fuels for energy production
    d. Using renewable energy sources to reduce carbon emissions