KATHMANDU UNIVERSITY
End Semester Examination
February, 2025

Marks Scored:

Level : B.E.
Year : II

Course : CIEG 206
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date : 11 FEB 2025

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices

1. The line joining points having equal values of rainfall in a given duration is known as
   a. Isobar
   b. Isohyet
   c. Intensity duration curve
   d. Depth area duration curve

2. The time required by rainwater to reach the outlet of the drainage basin, is generally called
   a. Time of concentration
   b. Time of overland flow
   c. Concentration time of overland flow
   d. Duration of the rainfall

3. The radius of influence is
   a. Radius of the main well
   b. Distance from the wall of the main well to the point of zero draw down
   c. Distance from the center of the main well to the point of zero drawdown
   d. Radius of observation well r_1 and r_2

4. The area between the isohyets 45cm and 55cm is 100 square km and between 55cm and 65 cm is 150 square km. The average depth of annual precipitation over the above basin of 250 square km will be
   a. 50 cm
   b. 55 cm
   c. 56 cm
   d. 60 cm

5. A catchment is made of 60% area with a runoff coefficient of 0.4 and the remaining 40% area with runoff coefficient of 0.6. What is the weighted runoff coefficient to be used in the rational formula?
   a. 0.6
   b. 0.24
   c. 0.5
   d. 0.48

6. The rational method used for the computation of the runoff from a watershed gives
   a. Runoff volume
   b. Discharge rate of channel
   c. Runoff rate
   d. Peak runoff rate

7. Darcy's law for groundwater movement states that the velocity is proportional to
   a. Hydraulic gradient
   b. The square of hydraulic gradient
   c. The logarithmic of hydraulic gradient
   d. Reciprocal of hydraulic gradient

8. _____ model includes a scale model that represent the system on a reduced scale
   a. Stochastic
   b. Deterministic
   c. Physical
   d. Abstract

9. Horton infiltration equation is given by
   a. $f = f_o + (f_c - f_o)e^{-kt}$
   b. $f = f_c + (f_o - f_c)e^{-kt}$
   c. $f = f_c + (f_o + f_c)e^{-kt}$
   d. $f = f_c + (f_o - f_c)e^{-kt}$

   Where the symbol has its usual meaning

10. ϕ-index is defined as
    a. the difference between maximum and minimum infiltration capacities
    b. the maximum rate at which soil absorbs water
    c. the average rainfall above which the rainfall volume equals the runoff volumes
    d. the minimum infiltration rate during the storm

11. Direct runoff is the sum of
    a. the surface runoff and the base flow
    b. the base flow and the groundwater runoff
    c. the delayed subsurface runoff and the deep percolation
    d. the surface runoff, prompt interflow and precipitation on the channel surface

12. Area velocity of stream flow measurement involves measuring
    a. Amount of salt used and velocity
    b. Cross-sectional area and sediment sampling
    c. Velocity of flow and cross-sectional area
    d. Velocity of flow and plan area

13. _____ is also termed as consumptive use
    a. Evapotranspiration b. Transpiration
    c. Evaporation d. infiltration

14. Which one of the following is the correct statement about a rating curve
    a. The rating curve is used to convert records of flow rates into sediment yield
    b. The records of water level are done using salt dilution method
    c. The rating curve method is the direct method of flow measurement
    d. The rating curve is used to convert records of water level into flow rates

15. Which of the following instruments is not connected with river discharge measurement?
    a. Sounding weight b. Current meter c. Hygrometer d. Wading rod

16. The method to correct for any inconsistencies at a certain rain gauge station is known as
    a. Double mass curve analysis b. Flow duration curve analysis
    c. Flow mass curve analysis d. Depth area duration analysis

17. In moderately deep streams the average velocity is observed at
    a. 0.2 times the depth of flow below free surface
    b. 0.8 times the depth of flow below free surface
    c. 0.6 times the depth of flow below the free surface
    d. 0.2 and 0.8 times the depth of flow below the free surface

18. An expression of the water budget of a catchment for a time interval Δt is given by
    a. $P-R-G-E-T=\Delta S$ b. $P-R-G-E+T=\Delta S$ c. $P-R-G+E-T=\Delta S$ d. $P-R+G-E-T=\Delta S$
    Where, P= precipitation, R= surface runoff, G= net Ground water flow of catchment, E= evaporation, T= transpiration and ΔS= change in storage

19. The deterioration of rocks, soils, and minerals through contact with water, atmospheric gases, and sunlight and biological organisms is called _____.
    a. Erosion b. Weathering c. Sedimentation d. Aggradation

20. The sediment whose size ranges from 0.002 to 0.0625 mm is _____.
    a. Sand b. Clay c. Pebbles d. Silt