

UNIT II: GEOMORPHOLOGY

Set I

1. What does the term "hydrology" primarily refer to?

- a) Study of the Earth's crust
- b) Study of water distribution in the atmosphere
- c) Study of the movement, distribution, and quality of water on Earth
- d) Study of sediment transport in rivers

Answer: c) Study of the movement, distribution, and quality of water on Earth

2. Which of the following is NOT a major component of the hydrological cycle?

- a) Precipitation
- b) Evaporation
- c) Condensation
- d) Photosynthesis

Answer: d) Photosynthesis

3. In hydrology, what does the term "infiltration" refer to?

- a) Movement of water through the soil
- b) Movement of water through plant roots
- c) Water flowing in rivers and streams
- d) Water stored in lakes and reservoirs

Answer: a) Movement of water through the soil

4. Which of the following is NOT a type of precipitation?

- a) Rain
- b) Snow
- c) Hail
- d) Dew

Answer: d) Dew

5. What is the term for the portion of precipitation that runs off the surface of the Earth and enters rivers and streams?

- a) Infiltration
- b) Transpiration
- c) Evapotranspiration
- d) Surface runoff

Answer: d) Surface runoff

6. Which of the following is a common method for measuring precipitation?

- a) Pyranometer
- b) Barometer
- c) Rain gauge
- d) Anemometer

Answer: c) Rain gauge

7. The term "percolation" in hydrology refers to:

- a) Movement of water through plant tissues
- b) The sinking of water into the ground
- c) Water flowing in underground rivers
- d) Movement of water from the soil to the atmosphere

Answer: b) The sinking of water into the ground

8. What is the primary driving force for evaporation from open water bodies like lakes and oceans?

- a) Solar radiation
- b) Wind speed
- c) Temperature
- d) Humidity

Answer: a) Solar radiation

9. Which of the following is NOT a type of hydrological model?

- a) Rainfall-Runoff Model
- b) Groundwater Flow Model
- c) Weather Forecast Model
- d) Snowmelt Runoff Model

Answer: c) Weather Forecast Model

10. The process of water movement through plant roots and its release into the atmosphere is called:

- a) Infiltration
- b) Percolation
- c) Transpiration
- d) Evaporation

Answer: c) Transpiration

11. What is the term for the underground layer of water-saturated rock or sediment from which groundwater can be extracted?

- a) Aquifer

b) Watershed

c) Permeability

d) Precipitation

Answer: a) Aquifer

12. Which of the following is a measure of the ease with which water can flow through a porous material?

a) Porosity

b) Infiltration

c) Permeability

d) Evapotranspiration

Answer: c) Permeability

13. The process by which groundwater rises to the surface due to pressure is known as:

a) Spring discharge

b) Aquifer recharge

c) Artisan well pumping

d) Cone of depression

Answer: a) Spring discharge

14. What is the term for the area of land that drains into a particular river or lake?

a) Aquifer

b) Watershed

c) Floodplain

d) Estuary

Answer: b) Watershed

15. Which of the following factors can affect the rate of evaporation from a water surface?

- a) Wind speed
- b) Precipitation
- c) Soil moisture
- d) Groundwater level

Answer: a) Wind speed

16. The process of artificially increasing the recharge of groundwater by injecting water into an aquifer is called:

- a) Groundwater depletion
- b) Aquifer storage and recovery
- c) Percolation
- d) Transpiration

Answer: b) Aquifer storage and recovery

17. What is the term for the maximum amount of water vapor that can be held by the air at a given temperature and pressure?

- a) Relative humidity
- b) Specific humidity
- c) Dew point
- d) Saturation vapor pressure

Answer: d) Saturation vapor pressure

18. Which of the following factors can influence the rate of groundwater flow in an aquifer?

- a) Aquifer thickness
- b) Permeability
- c) Hydraulic gradient
- d) All of the above

Answer: d) All of the above

19. What is the term for the process of water movement through soil or rock in response to gravity?

- a) Infiltration
- b) Percolation
- c) Capillary action
- d) Transpiration

Answer: b) Percolation

20. Which of the following is NOT a major factor contributing to floods?

- a) Rapid snowmelt
- b) High groundwater levels
- c) Intense rainfall
- d) Low riverbanks

Answer: d) Low riverbanks

21. The Nash-Sutcliffe Efficiency (NSE) index is commonly used to assess the performance of which type of hydrological model?

- a) Rainfall-Runoff Model
- b) Groundwater Flow Model

c) Snowmelt Runoff Model

d) Floodplain Model

Answer: a) Rainfall-Runoff Model

22. What is the term for the process of converting liquid water into water vapor through heating?

a) Condensation

b) Evaporation

c) Sublimation

d) Precipitation

Answer: b) Evaporation

23. Which of the following is a key component of the hydrologic equation used to describe the movement of water in a watershed?

a) Soil type

b) Groundwater depth

c) Time of day

d) Precipitation

Answer: d) Precipitation

24. The term "baseflow" in hydrology refers to:

a) Flow of water through pipes

b) Flow of water in rivers during dry periods

c) Flow of water from melting snow

d) Flow of water from a dam

Answer: b) Flow of water in rivers during dry periods

25. Which of the following is an example of a non-point source of pollution in a watershed?

- a) Wastewater treatment plant discharge
- b) Industrial effluent pipe
- c) Agricultural runoff
- d) Waterfall

Answer: c) Agricultural runoff

26. What is the term for the process of water vapor changing back into liquid water droplets in the atmosphere?

- a) Evaporation
- b) Condensation
- c

) Precipitation

- d) Sublimation

Answer: b) Condensation

27. Which of the following factors is NOT considered when calculating potential evapotranspiration (PET)?

- a) Temperature
- b) Humidity
- c) Wind speed
- d) Solar radiation

Answer: b) Humidity

28. What is the term for the portion of precipitation that is intercepted by vegetation and evaporates before reaching the ground?

- a) Infiltration
- b) Percolation
- c) Evapotranspiration
- d) Canopy storage

Answer: d) Canopy storage

29. Which of the following is a measure of the amount of water vapor present in the air?

- a) Relative humidity
- b) Specific humidity
- c) Dew point
- d) Precipitation rate

Answer: b) Specific humidity

30. The process of water moving horizontally through soil or rock layers is known as:

- a) Infiltration
- b) Percolation
- c) Capillary rise
- d) Transpiration

Answer: b) Percolation

31. What is the primary source of groundwater recharge in many regions?

- a) Desalination plants
- b) Rainwater harvesting

- c) Industrial discharge
- d) Riverbank infiltration

Answer: b) Rainwater harvesting

32. Which of the following is a measure of the energy required to change water from a liquid to a vapor state?

- a) Heat capacity
- b) Latent heat of vaporization
- c) Specific heat
- d) Sensible heat

Answer: b) Latent heat of vaporization

33. The process of water moving upward through soil due to surface tension and adhesion is known as:

- a) Infiltration
- b) Percolation
- c) Capillary rise
- d) Transpiration

Answer: c) Capillary rise

34. Which of the following is NOT a factor that can influence the rate of groundwater flow in an aquifer?

- a) Aquifer porosity
- b) Aquifer depth
- c) Aquifer density
- d) Aquifer permeability

Answer: c) Aquifer density

35. Which of the following is a method for estimating groundwater recharge?

- a) Measuring river discharge
- b) Installing piezometers
- c) Using the Thornthwaite method
- d) Conducting a tracer test

Answer: d) Conducting a tracer test

36. What is the term for the loss of water vapor from the leaves of plants?

- a) Precipitation
- b) Transpiration
- c) Evaporation
- d) Infiltration

Answer: b) Transpiration

37. What is the primary cause of groundwater contamination in urban areas?

- a) Agricultural runoff
- b) Industrial discharges
- c) Natural mineral leaching
- d) Atmospheric deposition

Answer: b) Industrial discharges

38. Which of the following factors can affect the rate of infiltration of water into the soil?

- a) Soil texture
- b) Soil temperature
- c) Soil color

d) Soil depth

Answer: a) Soil texture

39. The process of water moving vertically through soil or rock due to gravity is known as:

a) Infiltration

b) Percolation

c) Capillary rise

d) Transpiration

Answer: b) Percolation

40. What is the term for the process of water flowing from the soil into the atmosphere through plant leaves?

a) Infiltration

b) Percolation

c) Evapotranspiration

d) Transpiration

Answer: d) Transpiration

41. Which of the following is a measure of the total volume of water that flows into and out of a groundwater system?

a) Recharge

b) Discharge

c) Permeability

d) Evaporation

Answer: b) Discharge

42. The process of water moving horizontally through saturated soil or rock is known as:

- a) Infiltration
- b) Percolation
- c) Lateral flow
- d) Capillary rise

Answer: c) Lateral flow

43. What is the term for the water that remains in the soil after excess water has drained away?

- a) Groundwater
- b) Capillary water
- c) Gravitational water
- d) Infiltration water

Answer: b) Capillary water

44. What is the term for the process of water moving upward through soil due to capillary action?

- a) Infiltration
- b) Percolation
- c) Capillary rise
- d) Transpiration

Answer: c) Capillary rise

45. Which of the following is a measure of the amount of water that can be stored in the soil and is available to plants?

- a) Field capacity

- b) Wilting point
- c) Capillary fringe
- d) Permeability

Answer: a) Field capacity

46. Which of the following is a measure of the rate at which water flows through a unit cross-sectional area of an aquifer?

- a) Specific yield
- b) Hydraulic conductivity
- c) Aquifer storage coefficient
- d) Porosity

Answer: b) Hydraulic conductivity

47. What is the term for the upper boundary of the saturated zone in an aquifer?

- a) Water table
- b) Aquifer boundary
- c) Permeability limit
- d) Capillary fringe

Answer: a) Water table

48. Which of the following factors can influence the movement of contaminants in groundwater?

- a) Aquifer properties
- b) Contaminant properties
- c) Groundwater flow velocity
- d) All of the above

Answer: d) All of the above

49. What is the term for the process of water moving through small spaces or pores in soil or rock?

- a) Infiltration
- b) Percolation
- c) Capillary action
- d) Transpiration

Answer: c) Capillary action

50. Which of the following is a measure of the ability of a material to transmit water?

- a) Porosity
- b) Permeability
- c) Infiltration rate
- d) Capillarity

Answer: b) Permeability

Set II

Here are 50 additional multiple-choice questions on hydrology for postgraduate students, with correct answers:

1. What is the primary source of energy that drives the hydrological cycle?

- a) Geothermal heat
- b) Wind energy
- c) Solar radiation
- d) Tidal forces

Answer: c) Solar radiation

2. Which of the following processes involves the conversion of water vapor into ice crystals or snowflakes?

- a) Sublimation
- b) Precipitation
- c) Condensation
- d) Evaporation

Answer: b) Precipitation

3. Which of the following is a key factor influencing the rate of evapotranspiration from vegetation?

- a) Soil moisture content
- b) Soil pH
- c) Leaf color

d) Altitude

Answer: a) Soil moisture content

4. What is the term for the process of water percolating through the unsaturated zone in the soil before reaching the water table?

a) Vadose zone flow

b) Capillary action

c) Lateral flow

d) Groundwater recharge

Answer: a) Vadose zone flow

5. In hydrology, what does the term "karst" refer to?

a) A type of sedimentary rock

b) Underground caves and sinkholes

c) The measurement of river discharge

d) Surface water storage

Answer: b) Underground caves and sinkholes

6. Which of the following factors can affect the rate of snowmelt in a watershed?

a) Snowpack density

b) Soil permeability

c) Vegetation type

d) Groundwater level

Answer: a) Snowpack density

7. What is the term for the process of water vapor changing directly into ice without passing through a liquid phase?

- a) Condensation
- b) Sublimation
- c) Evaporation
- d) Precipitation

Answer: b) Sublimation

8. Which of the following factors can influence the rate of groundwater flow in an aquifer?

- a) Aquifer thickness
- b) Aquifer porosity
- c) Aquifer temperature
- d) Aquifer color

Answer: b) Aquifer porosity

9. What is the term for the process of water moving from the atmosphere to the Earth's surface as rain, snow, or sleet?

- a) Evaporation
- b) Precipitation
- c) Transpiration
- d) Infiltration

Answer: b) Precipitation

10. Which of the following is a measure of the ability of a soil or rock to retain water against the force of gravity?

- a) Infiltration capacity

b) Saturated hydraulic conductivity

c) Field capacity

d) Hydraulic gradient

Answer: c) Field capacity

11. What is the term for the area of land where all the water that falls as precipitation eventually flows into a common body of water, such as a river or lake?

a) Watershed

b) Aquifer

c) Floodplain

d) Estuary

Answer: a) Watershed

12. Which of the following factors can affect the rate of groundwater flow through an aquifer?

a) Temperature of the groundwater

b) Hydraulic conductivity of the aquifer material

c) Depth of the groundwater table

d) Elevation of the groundwater recharge area

Answer: b) Hydraulic conductivity of the aquifer material

13. What is the term for the process by which water molecules move from areas of higher concentration to areas of lower concentration through a semi-permeable membrane?

a) Osmosis

b) Reverse osmosis

c) Filtration

d) Distillation

Answer: a) Osmosis

14. In hydrology, what does the term "bankfull discharge" refer to?

a) The maximum flow rate of a river before it overflows its banks

b) The minimum flow rate of a river during dry periods

c) The flow rate of a river when it is at its average level

d) The flow rate of a river during a flood event

Answer: a) The maximum flow rate of a river before it overflows its banks

15. What is the term for the process of water vapor being released into the atmosphere by plants through small openings in their leaves?

a) Precipitation

b) Transpiration

c) Evaporation

d) Infiltration

Answer: b) Transpiration

16. Which of the following factors can influence the rate of groundwater recharge?

a) Soil type

b) Soil color

c) Soil pH

d) Soil texture

Answer: a) Soil type

17. The process of water moving through small openings or pores in soil or rock due to capillary forces is known as:

- a) Infiltration
- b) Percolation
- c) Capillary action
- d) Transpiration

Answer: c) Capillary action

18. What is the term for the movement of water in underground rivers and streams?

- a) Infiltration
- b) Percolation
- c) Subsurface flow
- d) Transpiration

Answer: c) Subsurface flow

19. Which of the following factors can influence the rate of groundwater flow in a confined aquifer?

- a) Aquifer thickness
- b) Aquifer temperature
- c) Aquifer porosity
- d) Aquifer pressure

Answer: d) Aquifer pressure

20. What is the term for the process of water moving downward through the soil under the force of gravity?

- a) Infiltration

- b) Percolation
- c) Capillary rise
- d) Transpiration

Answer: b) Percolation

21. Which of the following is a measure of the total volume of water that flows into and out of a groundwater system over a specific period of time?

- a) Recharge
- b) Discharge
- c) Infiltration
- d) Evaporation

Answer: b) Discharge

22. What is the term for the process of water moving vertically through soil or rock due to the pressure of overlying water?

- a) Infiltration
- b) Percolation
- c) Capillary rise
- d) Artesian flow

Answer: d) Artesian flow

23. Which of the following is a method for estimating groundwater recharge?

- a) Soil moisture measurements
- b) Streamflow measurements
- c) Tracer studies
- d) Geophysical surveys

Answer: c) Tracer studies

24. What is the term for the process of water moving from one aquifer to another due to a difference in hydraulic head?

- a) Groundwater discharge
- b) Interbasin transfer
- c) Aquifer connection
- d) Hydraulic gradient

Answer: b) Interbasin transfer

25. Which of the following is a measure of the ability of a material to transmit water under the influence of a hydraulic gradient?

- a) Hydraulic conductivity
- b) Permeability

- c) Specific yield
- d) Porosity

Answer: a) Hydraulic conductivity

26. What is the term for the upper boundary of an unconfined aquifer that is in contact with the atmosphere?

- a) Water table
- b) Perched water table
- c) Capillary fringe
- d) Confined boundary

Answer: a) Water table

27. Which of the following is a measure of the potential volume of water that an aquifer can yield over time?

- a) Specific yield
- b) Transmissivity
- c) Storage coefficient
- d) Hydraulic gradient

Answer: b) Transmissivity

28. What is the term for a well that is intentionally constructed to intercept and control groundwater flow, often to lower the water table in an area?

- a) Monitoring well
- b) Injection well
- c) Extraction well
- d) Piezometer

Answer: c) Extraction well

29. Which of the following factors can affect the rate of groundwater flow in a confined aquifer?

- a) Aquifer thickness
- b) Aquifer porosity
- c) Aquifer temperature
- d) Aquifer density

Answer: a) Aquifer thickness

30. What is the term for the process of water seeping into underground storage tanks, often used for petroleum products?

- a) Infiltration

b) Percolation

c) Leachate

d) Retention

Answer: c) Leachate

31. In hydrology, what does the term "aquitard" refer to?

a) A highly permeable rock layer

b) A layer of impermeable material that restricts the flow of groundwater

c) An underground cave system

d) A type of sedimentary rock

Answer: b) A layer of impermeable material that restricts the flow of groundwater

32. Which of the following is a common method for measuring groundwater levels in a monitoring well?

a) Ground-penetrating radar

b) Acoustic Doppler device

c) Electric conductivity probe

d) Dip tape

Answer: d) Dip tape

33. What is the term for the process of artificially recharging an aquifer by injecting treated water into it to replenish groundwater supplies?

a) Aquifer dewatering

b) Aquifer storage and recovery

c) Groundwater mining

d) Leachate injection

Answer: b) Aquifer storage and recovery

34. Which of the following is a measure of the average velocity at which groundwater flows through an aquifer?

- a) Darcy's law
- b) Reynolds number
- c) Froude number
- d) Peclet number

Answer: a) Darcy's law

35. What is the term for the process of water moving through rock fractures and bedding planes in an aquifer?

- a) Intergranular flow
- b) Karst flow
- c) Preferential flow
- d) Matrix flow

Answer: c) Preferential flow

36. Which of the following factors can influence the rate of groundwater flow in a karst aquifer?

- a) Soil type
- b) Limestone dissolution
- c) Aquifer depth
- d) Vegetation cover

Answer: b) Limestone dissolution

37. In hydrology, what does the term "cone of depression" refer to?

- a) A geological feature in the shape of a cone
- b) The cone-shaped area of lowered water table around a pumping well
- c) A volcanic crater filled with water
- d) A type of sinkhole

Answer: b) The cone-shaped area of lowered water table around a pumping well

38. What is the term for the process of artificially increasing the recharge of groundwater by diverting surface water into infiltration basins or recharge ponds?

- a) Groundwater depletion
- b) Managed aquifer recharge
- c) Subsurface drainage
- d) Groundwater overdraft

Answer: b) Managed aquifer recharge

39. Which of the following is a measure of the storage capacity of an aquifer for water, typically expressed as a fraction of its volume?

- a) Aquifer thickness
- b) Aquifer porosity
- c) Aquifer storage coefficient
- d) Aquifer hydraulic conductivity

Answer: c) Aquifer storage coefficient

40. What is the term for a geological formation that can store and transmit water, but its permeability is not high enough to yield significant quantities of water to a well or spring?

- a) Aquifer

- b) Aquitard
- c) Aquiclude
- d) Aquifuge

Answer: c) Aquiclude

41. Which of the following is a measure of the amount of water that can be extracted from an aquifer over time without causing depletion?

- a) Aquifer yield
- b) Aquifer recharge
- c) Aquifer depletion
- d) Aquifer transmissivity

Answer: a) Aquifer yield

42. What is the term for the process of water moving through tiny spaces between grains or particles in sediment or soil?

- a) Infiltration
- b) Percolation
- c) Capillary action
- d) Matrix flow

Answer: d) Matrix flow

43. Which of the following factors can affect the rate of groundwater flow in a confined aquifer?

- a) Aquifer temperature
- b) Aquifer color
- c) Aquifer pressure
- d) Aquifer density

Answer: c) Aquifer pressure

44. What is the term for the process of artificially increasing the recharge of groundwater by spreading water over the land surface?

- a) Aquifer storage and recovery
- b) Groundwater mining
- c) Flood irrigation
- d) Direct injection

Answer: c) Flood irrigation

45. Which of the following is a measure of the ease with which water can flow through an aquifer under the influence of a hydraulic gradient?

- a) Porosity
- b) Transmissivity
- c) Specific yield
- d) Hydraulic conductivity

Answer: d) Hydraulic conductivity

46. What is the term for a well that is constructed to draw water from a confined aquifer in which the water level rises above the top of the aquifer?

- a) Artesian well
- b) Injection well
- c) Extraction well
- d) Monitoring well

Answer: a) Artesian well

47. Which of the following is a common method for removing contaminants from groundwater?

- a) Infiltration
- b) Bioremediation
- c) Evapotranspiration
- d) Capillary rise

Answer: b) Bioremediation

48. In hydrology, what does the term "drawdown" refer to?

- a) The rate of groundwater discharge from a well
- b) The depth to the water table in an aquifer
- c) The lowering of the water table around a pumping well
- d) The volume of water stored in an aquifer

Answer: c) The lowering of the water table around a pumping well

49. What is the term for the movement of

water through rock fractures and joints in an aquifer?

- a) Intergranular flow
- b) Karst flow
- c) Preferential flow
- d) Matrix flow

Answer: c) Preferential flow

50. Which of the following is a measure of the ability of a material to transmit water through connected pore spaces?

- a) Porosity

b) Transmissivity

c) Specific yield

d) Hydraulic gradient

Answer: b) Transmissivity