Q1. The irrigation method where only one – fifth to one – half of the land surface is wetted by water resulting in less evaporation and less pudding of soil is called_____.
(a) Bord irrigation method
(b) Basin flooding
(c) Sprinkler irrigation method
(d) Furrow irrigation method

Q2. Capacity of an irrigation tank depends on
(a) the topography of the land
(b) the population in that region
(c) contour of the place
(d) type of crop and duty

Q3. Which of the following statements is/are not among the major limitations of sprinkler irrigation?
A. Strong wind disturbs the sprinkling
B. It requires heavy initial investment.
C. It minimizes the erosion of the soil.
(a) Only B
(b) A, B and C
(c) Only C
(d) Only A

Q4. The conjunctive use of water in a basin means:
(a) Combined use of water for irrigation and hydropower generation
(b) Use of water by farmers' cooperative. depth of drain below the ground surface
(c) Use of water for irrigating both Rabi and Kharif crops
(d) Combined use of surface and ground water resources

Q5. Percentage of water available on earth that is saline is
(a) 33%
(b) 97%
(c) 69%
(d) 0%

Q6. When crops are grown on ridges, running on the sides of the ditches, then the kind of irrigation adopted is called is
(a) Drip
(b) Flood
(c) Furrow
(d) Check

Q7. Salinity in soils
(a) increases crop yield
(b) makes soil infertile
(c) reduce water-logging
(d) none of the above

Q8. Name the method of irrigation which does not come under control flooding:
(a) Wild flooding
(b) Free flooding
(c) Basin flooding
(d) Borders Strips

Q9. Non–consumptive use of water is in
(a) Hydro-power generation
(b) City water supply
(c) fire fighting
(d) All of the above

Q10. In which method the field is divided into a number of long parallel strips?
(a) Border flooding irrigation
(b) Furrow irrigation
(c) Free flooding irrigation
(d) Check flooding irrigation

Q11. Sprinkler irrigation is preferred when:
(a) The ground is undulating
(b) The crop has shallow roots
(c) The irrigation water is scarce
(d) All of the above

Q12. A hydrological study conducted in a small town revealed that the intensity of rainfall is more than the infiltration capacity of soil. The infiltration rate in this case will be:
(a) > rate of rainfall
(b) = infiltration capacity
(c) = rate of rainfall
(d) > infiltration capacity

Q13. Convective precipitation is caused by:
(a) Cirrus clouds
(b) Stratiform clouds
(c) Cumuliform clouds
(d) Orographic clouds

Q14. If 'B' and 'd' are the bed width and depth of a channel in meter respectively, the combined losses due to evaporation and seepage in cumec per kilometer length of the channel is
(a) $\frac{1}{50}(B + d)^{2/3}$
(b) $\frac{1}{100}(B + d)^{2/3}$
(c) $\frac{1}{150}(B + d)^{2/3}$
(d) $\frac{1}{200}(B + d)^{2/3}$

Q15. Pick up the correct statements form the following
(a) The maximum rate of storm run-off is called peak drainage discharge
(b) Rational method of estimating peak run off, may be used precisely for areas less than 50 hectares.
(c) The period after which the entire area starts contributing to the run off is called the time of concentration.
(d) All options are correct

Q16. If the intensity of rainfall is more than the infiltration capacity of soil, then the infiltration rate will be.
(a) Equal to rate of rainfall
(b) Equal to infiltration capacity
(c) More than rate of rainfall
(d) More than infiltration capacity

Q17. A 60% index of wetness means
(a) rain excess of 40%
(b) rain deficiency of 40%
(c) rain deficiency of 60%
(d) none of the above

Q18. Transpiration occurs only
(a) in night
(b) in hills
(c) in sea
(d) none of these

Q19. The delayed flow that reaches the rivers mainly as ground water is known as
(a) underground flow
(b) virgin flow
(c) base flow
(d) none of these

Q20. Humidity refers to the _____.
(a) Volume of the air
(b) Water vapor in the air
(c) Pressure of the moisture
(d) Mass of the air

Q21. Rain during cold weather season is due to
(a) high pressure
(b) low pressure
(c) both (a) & (b)
(d) none of the above

Q22. Rainfall simulator type infiltrometre give lower values than flooding type infiltrometer because

(a) impact of rainfall is considered
(b) equipment is very heavy
(c) both (a) and (b)
(d) none of the above

Q23. When the unit duration of an unit hydrograph decreases and approaches zero hydrograph is called
(a) instantaneous unit hydrograph
(b) constant unit hydrograph
(c) straight line hydrograph
(d) poly unit hydrograph

Q24. Isochrones are the curves showing distribution of:
(a) Total settlement
(b) Excess hydrostatic pressure
(c) Total pressure
(d) None of the other options

Q25. Which is the simplest method of estimating average rainfall if the rainfall is uniformly distributed on its areal pattern?
(a) Arithmetic average method
(b) Thiessen polygon method
(c) Isohyetal method
(d) All of the above

Q26. The precipitations measured in terms of
(a) Intensity of pressure
(b) Depth of water
(c) Quantity of water
(d) Volume of water

Q27. Separation of base flow/total runoff can be done by:-
(a) Straight line method
(b) Two line method
(c) Curve extension method
(d) All of the above

Q28. The rates of rainfall for successive 20 min period of 140 minutes are 2.5, 2.5 , 10, 7.6, 1.25, 1.25 and 5 cm/h. Taking the value of phi-index as 3.2 cm/h, the total runoff (in cm):
(a) 6
(b) 4.33
(c) 10
(d) 5

Q29. S – hydrography is used to obtain unit hydrograph of
(a) shorter duration from longer duration
(b) longer duration from shorter duration

(c) both (a) and (b)
(d) none of the above

Q30. Under the same conditions, which of the following shapes of water surface will give the highest rate of evaporation?
(a) Convex water surface
(b) Flat water surface
(c) Concave water surface
(d) Independent of shape of water surface

Q31. Hydrology is necessary for civil engineers for
(a) Designing and construction of irrigation structure
(b) Designing and construction of ridges and culverts
(c) Flood control works
(d) All of these

Q32. The ratio of actual evapo – transpiration to potential evapo-transpiration is in the range
(a) 0.0 to 0.4
(b) 0.6 to 0.9
(c) 0 to 1
(d) 1.0 to 2.0

Q33. What is Rain Hyetograph?
(a) Graph plotted between Rainfall in mm Versus Time in Hr
(b) Bar Chart showing Rainfall intensity Versus Time
(c) graph showing Discharge Versus Time
(d) graph showing accumulated precipitation Versus Time

Q34. Which method gives accurate estimate of average rainfall in a hill area catchment?
(a) Isohyetal method
(b) Normal ratio method
(c) Arithmetic mean method
(d) Theisen polygon method

Q35. If area of the catchment is 62.5sq. mm and axial length of the catchment is 10mm, the form factor will be :
(a) 0.625
(b) 0.31
(c) 6.25
(d) 1

Q36. For calculating the maximum flood discharge in Northern India by Dicken's formula the value of coefficient 'C' is
(a) 13.9
(b) 19.5
(c) 11.4
(d) 22.4

Q37. Mean precipitation over an area is best obtained form gauged amounts by
(a) Arithmetic mean method
(b) Thiessen method
(c) Linearly interpolated isohyetal method
(d) Orographically weighted isohyetal method

Q38. What percent of agricultural land is reliably irrigated in India as per 2010 World Bank data?
(a) 65
(b) 55
(c) 75
(d) 35

Q39. The maximum quantity of water that can be guaranteed during a critical dry period is called the following:
(a) Average yield
(b) Safe yield
(c) Secondary yield
(d) None of the above

Q40. Eutrophication of water bodies is caused by
(a) Discharge of toxic substances
(b) Excessive discharge of nutrients
(c) Excessive discharge of suspended solids
(d) Excessive discharge of chlorides

Q41. Irrigation efficiency of an irrigation system is the ration of:
(a) Water actually stored in root zone to water delivered to the farm
(b) Water actually utilized by growing crops to water delivered from the source
(c) Water reaching the farm to water delivered from the source
(d) Crop yield to total amount of water used in a field

Q42. The outlet discharge for a particular crop is given by:
(a) area/ outlet factor
(b) outlet factor/ area
(c) area × outlet factor
(d) none of the above

Q43. The field irrigation requirement is computed as
(a) Consumptive use + field application losses
(b) Net irrigation requirement + field application losses
(c) Net irrigation requirement + conveyance losses
(d) Consumptive use + conveyance losses

Q44. The state of the soil when plants fail to extract sufficient water for their requirement is…………

(a) maximum saturated point
(b) permanent wilting point
(c) ultimate utilization point
(d) None of these

Q45. The field capacity of a soil is 25%, its permanent wilting point is 15% and specific dry unit weight is 1.5. if the depth of root zone of a crop is 80cm, the storage capacity of the soil is
(a) 8 cm
(b) 10 cm
(c) 12 cm
(d) 14 cm

Q46. If the irrigation efficiency is 80%, conveyance losses are 20% and the actual depth of watering is 16 cm, the depth of water required at the canal outlet is………………..
(a) 10 cm
(b) 15 cm
(c) 20 cm
(d) 25 cm

Q47. One cumec – day is equal to
(a) 8.64 hectare metres
(b) 86.4 hectare metres
(c) 864 hectare metres
(d) 0.864 hectare metres

Q48. The quantity of sulphates (PPM) contained in good quality irrigation water is
(a) 0 – 192
(b) 195 – 480
(c) > 480
(d) All the above

Q49. The consumptive use coefficient for crop like wheat, barley, flax and other small grains is approximately:
(a) 0.6
(b) 0.66
(c) 0.9
(d) 1.1

Q50. Evapotranspiration in a crop filed surrounded by dry fallow land will be higher than that surrounded by vegetation due to: -
(a) Conduction of heat
(b) Oasis effect
(c) Clothes line effect
(d) Convection effect

Solutions

S1. Ans.(d)
Sol. Furrow irrigation is a method of laying out the water channel is such a way where gravity plays the role of providing Just enough water for suitable plants to grow.
→ In Furrow irrigation method only one fifth to one half of the land surface is welled by water.

S2. Ans.(d)
Sol. Capacity of an irrigation tank depends on type of crop and duty.

S3. Ans.(c)
Sol. Sprinkle irrigation is the method of applying water in a controlled manner in a way similar to rainfall
→ In this method erosion of soil occur.

S4. Ans.(d)
Sol.

S5. Ans.(c)
Sol. 71 percentage of earth surface is water covered and 97.3 percentage of 71 percentage is saline water.

S6. Ans.(c)
Sol. In Furrow irrigation crops are grown on ridges and water flow on ditches
→ . Furrow irrigation is a method of laying out the water channel is such a way where gravity plays the role of providing Just enough water for suitable plants to grow.
→ In Furrow irrigation method only one fifth to one half of the land surface is welled by water.

S7. Ans.(b)
Sol. The process of increasing the salt content is known as salinization.
→ excess of salinity makes soil infertile.

S8. Ans.(a)
Sol. Wild flooding does **not** come under control flooding

S9. Ans.(a)
Sol.

S10. Ans.(a)
Sol. Border Flooding
Border are usually long uniformly graded strips of land separated by earth bunds. Field is divided into a number of long parallel strips.

S11. Ans.(d)Sol. Irrigation required in Humid regions, And regions & semi grid regions.
Sol. Sprinkle irrigation preferred
(i) ground is undulation
(ii) crop has shallow roots

(iii) irrigation water is & scarce
Sprinkle irrigation is the method of applying water in a controlled manner in a way similar to rainfall
→ In this method erosion of soil occure

S12. Ans.(b)
Sol. If intensity of rainfall in more than infiltration capacity of soil then the infiltration rate equal to infiltration capacity
.

S13. Ans.(c)
Sol. Convective precipitation occurs when air rises Vertically through the self-sustaining mechanism of convection.
→ Convective Precipitation Caused by Cumuliform clouds.

.

S14. Ans.(d).Combined losses due to evaporation and seepage $\rightarrow =\frac{1}{200}(B+d)^{2/3}$

S15. Ans.(d)
Sol

S16. Ans.(b). If intensity of rainfall in more than infiltration capacity of soil then the infiltration rate equal to infiltration capacity
Sol.

S17. Ans.(b)
Sol. Sol. $\boxed{Index\ of\ wetness = \frac{Rainfall\ ina\ yca}{Avg\ annual\ rainfall} \times 100}$
Index of wetness > 100%→ good year
Index of wetness = 100%→ Normal year
Index of wetness < 100%→ bad year
→ If index of wetness is 60% then rain deficiently of 40%.

S18. Ans.(d)
Sol. Transpiration is the process or water movement through plant and its evaporation from aerial parts. Such as waves, levees, stums and flowers

S19. Ans.(a)
Sol. Delayed flow that reaches the rivers mainly as ground water is known as underground flow

S20. Ans.(b)
Sol. Humidity is the concentration of water vapor present in the air.

S21. Ans.(a)
Sol. Rain during Cold weather season is due to high pressure.

S22. Ans.(a)
Sol. Rainfall simulator type in filterometers give lower values than flooding type infiltrome because impact of rainfall is considered.

S23. Ans.(a)
Sol. When the unit duration of an unit hydrograph decreases and approaches Zero hydrograph is called instantaneous unit hydrograph

S24. Ans.(b)
Sol. Isochrone are the curves showing distribution of excess hydrostatic pressure.

S25. Ans.(a)
Sol. Arithmetic average method is the simplest method of estimating average rainfall if the rainfall is uniformly distributed.
$\rightarrow$ when the area of the basin is less than $500 km^2$ then this method is used.

S26. Ans.(b)
Sol. precipitations measured in terms of(mm)

S27. Ans.(d)
Sol.

S28. Ans.(b)
Sol.   Total runoff $= (10 - 3.2) \times \frac{20}{60}$
$$+(7.6 - 3.2) \times \frac{20}{60} + (5 - 3.2) \times \frac{20}{60}$$
$$= 2.26 + 1.46 + 0.6$$
$$= \underline{4.32\ cm}$$

S29. Ans.(c)
Sol. S-hydrograph us used in both shorter to longer duration & longer to shorter duration unit hydrograph.

S30. Ans.(a)
Sol. For convex surface evaporation is more due to more surface exposure
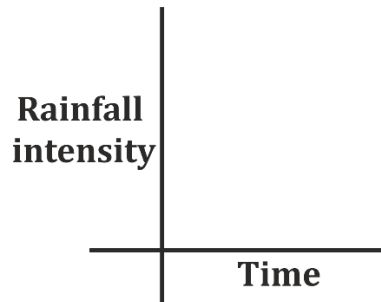
S31. Ans.(d)
Sol.

S32. Ans.(c)
Sol. Ratio of Actual evapotranspiration (AET) & Potential evapotranspiration (PET) equal to (0 to 1).

$$\boxed{Aridity\ Index = \frac{PET-AET}{PET}}$$

S33. Ans.(b)
Sol.

→ Bar chart between Rainfall intensity Vs time called Rain hydrograph.

S34. Ans.(a)
Sol. Isohytal method gives accurate estimate of average rainfall in hilly area catchment.

S35. Ans.(a)
Sol.   Area if Catchment $=62.5mm^2$
         Axial length $=10$ mm
Form factor $= \dfrac{basin\ area}{(basin\ lenght)^2}$
$= \dfrac{62.5}{10\times10}$
$= 0.625$

S36. Ans.(c)
Sol.   <u>Dicken Formula</u>
$$\boxed{Q = CA^{3/4}}$$
          Q→ discharge
          C→ Constant
          A→ Area

Area	C
(1) North India	11.5
(2) Madhya India	14-19.5
(3) Western ghat	22-25

S37. Ans.(c)
Sol. For calculating mean precipitation best method is isohytal method.

S38. Ans.(d)
Sol.

S39. Ans.(b)
Sol.

S40. Ans.(b)
Sol. Eutrophication – When a body of water becomes overly enriched of water with mineral & nutrients which induces excessive growth of algae.

S41. Ans.(b)
Sol. $$Irrigation\ efficiency = \frac{water\ actually\ utilized\ by\ growing\ crops}{water\ deliver\ from\ source}$$

S42. Ans.(a)
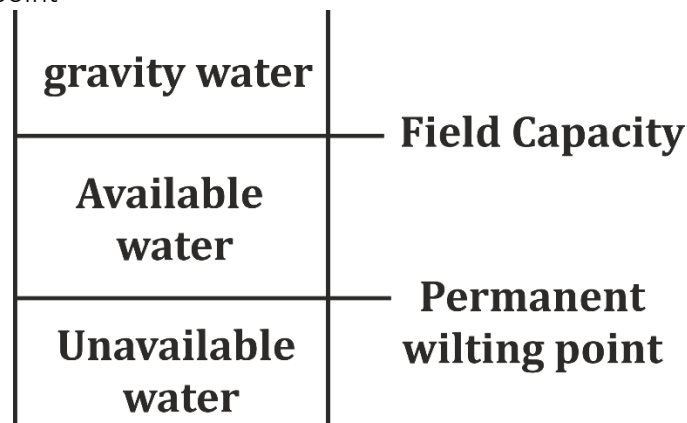Sol. $$outlet\ discharge = \frac{Area}{outlet\ factor}$$

S43. Ans.(b)
Sol.Field Irrigation requirement (F.I.R.) = Net irrigation requirement + field applicable losses.

S44. Ans.(b)
Sol The state of the soil when plants fail to extract sufficient water for their requirement is permanent wilting point

→ below permanent wilting point no water is extract by the plant.

S45. Ans.(c)
Sol. Sol. Field Capacity (fc) = 25%
Permanent wilting point (ϕ) = 15%
Specific & dry unit weight (G) = 1.5
         depth of root zone (d)= 80 cm.
Storage Capacity $= \frac{\gamma d(fc-\phi)}{\gamma_w}$

$\qquad = \frac{1.5\gamma\omega\times80(0.25-0.15)}{\gamma_w}$

$\qquad$ = 12 cm

S46. Ans.(d)
Sol. Irrigation efficiency =80%
Conveyance loss=20%
actual depth of watering = 16 cm
Assume depth of water = x cm.

$$\left(x \times \frac{80}{100}\right) - \left(x \times \frac{8}{100} \times \frac{20}{100}\right) = 16\ cm$$

$$\boxed{x = 25cm}$$

S47. Ans.(a)
Sol. 1 cumec-day

$$= 1\ \frac{m^3}{sec} \times 24 \times 60 \times 60 sec$$
$$= 24 \times 60 \times 60 m^3$$
$$\boxed{1\ hactare = 10^4 m^2}$$
$$= \frac{24 \times 60 \times 60}{10^4}$$

= 8.64 hactare metre

S48. Ans.(a)
Sol. For good quality irrigation water sulphate should be 0 to 192 PPM

S49. Ans.(c)
.
S50. Ans.(b)