



**KERALA AGRICULTURAL UNIVERSITY**  
**B.Tech.(Agrl. Engg.) 2022 & Previous Admissions**  
**III Semester Final Examination - February 2024**

Lwre.2104

**Watershed Hydrology (2+1)**

**Marks: 50**

**Time: 2 hours**

**I Match the following**

**(10x1=10)**

- |               |   |                                      |
|---------------|---|--------------------------------------|
| 1. Isohyets   | - | Contour of average annual rainfall   |
| 2. Hyetograph | - | Intensity of rainfall Vs time        |
| 3. Mass curve | - | Cumulative depth of rainfall Vs time |
| 4. Hydrograph | - | Discharge Vs time                    |
| 5. Isochrones | - | Contour of time of storm advancement |

**State True or False**

6. The intensity of storm is an inverse function of its duration.
7. Direct runoff is the sum of overland flow and interflow.
8. If the peak of the unit hydrograph is 25 cumec, then the peak of the hydrograph producing 8 cm of runoff is 215 cumec, assuming a constant base flow of 15 cumec.
9. Vegetation tends to decrease the runoff from the catchment.
10. The mean velocity in a vertical stream can be calculated by measuring the velocities at  $\frac{1}{5}$ th and  $\frac{4}{5}$ th of the depth of the stream in that vertical.

**II Write short notes on ANY FIVE of the following**

**(5x2=10)**

1. What are the departments maintaining climate records?
2. Write any two uses of hydrological studies.
3. Define Pan coefficient and explain its uses.
4. Compare Influent and Effluent streams.
5. What is an Unit Hydrograph?
6. Describe a stage-discharge-rating curve.
7. Discuss Rainwater harvesting in Micro catchment for drought management.

**III Answer ANY FIVE of the following**

**(5x4=20)**

1. Explain the process of measuring infiltration with double ring infiltrometer and data fitting.
2. What are the Hydrometeorological characteristics of basin?
3. Compare  $\phi$ - index and W-index with figure.
4. What are the basin characters affecting runoff?
5. What are the factors to be considered in selecting a site for a stream gauging station?
6. Explain flood routing the process mathematically.
7. Discuss drought management strategies.

**IV Write an essay on ANY ONE of the following**

**(1x10=10)**

1. Explain any two hydrograph separation technique with figure.
2. Explain the hydraulic cycle in nature with the help of a neat sketch, indicating its various phases.

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