Degree : **B.E (Full time)**
Branch : **Geoinformatics Engineering** **Semester : VI**
Subject code/ Subject title : GI 9025 RS and GIS application to Hydrology and Water Resources

Time : 3 Hours Max. Marks: 100

Answer ALL Questions

Part A (10 X 2 = 20)

1. What is return period of a certain probable rainfall and its significance?
2. What is a maximum probable rainfall?
3. How is watershed boundary delineated using a DEM?
4. List four stream patterns .
5. List down the merits of microwave RS over optical Rs for soil moisture estimation.
6. What are the types of drought?
7. What are confined and unconfined aquifer?
8. Write expression for Reynold's no. and hydraulic conductivity based on medium properties.
9. Express the irrigation water needs and water balance approach.
10. What are the objective of watershed management ?

Part B (5 X 16 = 80)

11. i) How is average depth of rainfall over an area derived in GIS through different methods? (12)
    ii) What is a curve number? (4)
12. a) Explain method to derive any two watershed characteristics through automated spatial analysis?

    (OR)

    b) List out and explain the remote sensing indices for study of crop and soil moisture.
13. a) Derive the discharge equation for a well in confined and unconfined aquifer.

    (OR)

    b) Derive specific yield . What should be the diameter of an open well to give a safe yield of 4.8 l/s? Assume a working head as 3.75m and the subsoil consists of fine sand.

14. a) Determine the crop water need of tomatoes with following data

Month	Jan	Feb	Mar	Apr	May	June	July
ETo (mm/day)	4.0	5.0	5.8	6.3	6.8	7.1	6.5

Humidity medium (60%)
Windspeed medium (3 m/sec)
Duration of growing period (from sowing): 150 days
Planting date: 1 February (direct sowing)

Precipitation	28	13	0	15	6	98	76

(OR)

b) Enumerate role of remote sensing in Mapping and monitoring the catchment and command area

15. a) Explain various drought indicators that are popularly being used.

    (OR)

    b)Make a detailed notes on integrated watershed management.