Roll No.

Time: 3 Hours          Answer ALL Questions          Max. Marks 100

### PART- A (10 x 2 = 20 Marks)

1. Write a short note on Lysimeter.

2. Write any two methods of evaporation suppression.

3. Give any one advantage and one limitation of the SCS_CN method of runoff estimation.

4. Write a note on sudden injection method of discharge measurement.

5. State how the NDVI is used for assessing the drought.

6. Write a short note on envelope curves.

7. Differentiate between meteorological and agricultural drought.

8. Define risk.

9. Differentiate between a perched aquifer and a leaky aquifer. .

10. Derive the basic equation governing the groundwater flow.

### Part – B (5 x 16 = 80 marks)

(Question No.11 is compulsory)

11. (i) Elaborate on the aquifer properties.                                                    (8)

    (ii) With neat sketches explain any four artificial recharge structures.          (8)

12. a) (i) Six raingauge stations were located in a basin. The normal annual rainfall depths at the stations recorded were 42.4, 53.6, 67.8, 78.5, 82.7 and 95.5 cm respectively. Determine the optimum number of raingauge stations to be established in this basin, if it is desired to limit the error in the mean value of rainfall to 10% (16)

(OR)

(ii) Explain the Thiessen Polygon method of averaging out the spatial precipitation depth over a basin, covered by more raingauge stations. Compare this method with the other two methods. (16)

13. a) (i) Discuss on the effects of the catchment characteristics on runoff. (8)

(ii) Describe the Strange table and SCS-CN method of runoff estimation. (8)

(OR)

b) (i) Describe the discharge measurement by area-velocity method (mid-section method). (8)

(ii) Elaborate on the Instantaneous Unit Hydrograph. (8)

14. a) Elaborate on the structural and non-structural ways of flood mitigation. (16)

(OR)

b) Write notes on

(i) Drought indices (8)

(ii) Drought Prone Area Programme (8)

15. a) (i) Discuss on the general principles of site selection and design of a reservoir. (8)

(ii) Draw the Elevation-Area-Capacity curve and explain. (8)

(OR)

b) Write notes on

(i) Sedimentation and life of a reservoir. (8)

(ii) Rule curve. (8)