9. Short answer type questions (Attempt any *six*) :

(a) Describe importance and impact of irrigation on environment.

(b) What is National Water Policy (NWP) 2012 ?

(c) What is the soil-water relationship ?

(d) Derive relationship between Duties and Delta.

(e) Explain term water assessment of crop.

(f) What is the base period and crop period ?

(g) Write a short note on water resources maintenance and also write advantages for the same.

(h) Describe losses of water in canal and factors on which canal losses depends. **6×2.5=15**

J-21-0073

B. Tech. EXAMINATION, 2021

Semester VI (CBCS)

HYDROLOGY AND WATER RESOURCES ENGINEERING

CE-604

Time : 2 Hours　　　　　　　　*Maximum Marks : 60*

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. What is the water budget equation ? A lake has water surface elevation of 103.2 m above datum. In a month lake has received an average inflow of 6 cumecs and in

same period the out flow from lake was 6.5 cumec. In that month the lake received a rainfall of 145 mm and the evaporation from lake surface was estimated as 6.1 cm. Using Water Budget equation, find the water surface elevation of lake at the end of this month. Surface area of lake is 5000 hectare.   **15**

2. What are the different forms of precipitation ? Discuss different types of rain gauges.   **15**

Section B

3. What are different types of infiltration indexes ? Discuss Green Ampt methods with two assumptions.

    15

4. A catchment has 6 rainguage stations. In a particular year the annual rainfall recorded by the different stations are as follows :   **15**

Stations	Precipitation (cm)
A	93.1
B	112.9
C	150.3
D	114.3
E	88.3
F	116.7

For the 10% error in estimation of mean rainfall, find the optimum norm of raingauges.

Section C

5. What is field capacity ? Discuss different types of zone of storage. Derive expression for field capacity.

    15

6. What is the need of flood routing ? Discuss its types and any *two* methods of flood routing.   **15**

Section D

7. Derives the expressions for discharges in the case of confined aquifer as per Dupuit's and Thiem's theory and compare results.   **15**

8. Define/Discuss the following terms :   **15**

    (a) Flexibility of module

    (b) Sensivity of module

    (c) Rigid module

    (d) Flexible module

    (e) Semi-rigid module.