

Roll No.

Total Pages : 03

BT-5/D-18
HYDROLOGY
CE-305N

35154

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. Assume any missing data.

Unit I

1. (a) Define the term "Hydrology". Discuss the scope and applications of hydrology to the engineering problems with reference to India. 7½
(b) What do you understand by the terms "stream geometry and hypsometric curves" ? Explain them with a suitable example. 7½
2. (a) List different types of self recording rain-gauges. Explain working of any of them with a neat sketch. 7½
(b) Discuss about applications of intensity duration-frequency and depth-area-duration curves used in Hydrology. 7½

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Unit II

3. (a) What do you mean by evaporation ? Write down Meyer's formula and Rohwer's formulae used for estimation of evaporation. 7½
(b) Describe methods used for measuring evapotranspiration of a given vegetation type. 7½
4. (a) The rainfalls on five successive days on a catchment were 2, 6, 9, 5 and 3 cm. If the phi index of the storm is 0.6 cm/h, find the surface runoff. 7½
(b) What do you mean by infiltration ? Explain infiltration process along with factors affecting it. 7½

Unit III

5. (a) List factors affecting seasonal and annual runoff of a catchment. Describe briefly the interactions of the factors listed by you. 7½
(b) What do you understand by design flood and design storm ? Discuss them with reference to a new water resources project. 7½
6. (a) Explain the term rainfall excess (ER). How is ERH of a storm obtained ? 7½

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- (b) What is an IUH ? What are its characteristics ?
Explain them with a diagram. $7\frac{1}{2}$

Unit IV

7. (a) What are the Dupuit's assumptions ? How are they useful in analyzing ground water flow ? $7\frac{1}{2}$
- (b) How to determine coefficient of permeability ?
Explain the laboratory method of determination of permeability by a neat sketch. $7\frac{1}{2}$
8. (a) If water sample has TDS of 1150 mg/l and EC 1900 units, calculate the specific resistance in ohms of another water sample which has TDS 6500 mg/l. $7\frac{1}{2}$
- (b) Define pH and how do you determine the pH value of sample of water in the laboratory ? $7\frac{1}{2}$

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