

(3 hours)

[Total Marks-80]

- N.B. 1. Question No.1 is compulsory
 2. Attempt any 3 Questions out of 5 Questions.
 3. Each question carries 20 marks
 4. Illustrate answers with suitable figures.

1. a) Explain briefly: [20]

(i) Abstractions from precipitation (ii) Slope-Area method (iii) Base flow separation (iv) Permeability & Transmissibility

2. a) Derive the S-Curve for the 4-hour Unit Hydrograph given below: [10]

Time (Hour)	0	4	8	12	16	20	24	28
4-Hour UHO(Cumecs)	0	10	30	25	18	10	5	0

- b) Explain procedure of deriving a Synthetic Unit Hydrograph for a catchment by using Snyder's method. [10]
3. a) What are the various methods for determining flood flows? Explain any two methods. [10]
- b) Explain various flood control methods. [10]
4. a) Explain the method of determining the coefficient of transmissibility of a confined aquifer by pumping out test. [10]
- b) A 30 cm. diameter well penetrates 20m below the static water table. After 24 hours of pumping at 5000 litres/minute the water level in test well at 100m is lowered by 0.5m. and in a well at 30 m away, drawdown is 1m. What is the transmissibility of aquifer? Also determine the drawdown in the main well. [10]
5. a) Explain in details various factors affecting evaporation. [10]
- b) A bridge has an expected life of 25 years and is designed for a flood magnitude of return period 100 years. (i) What is the risk of this hydraulic design? (ii) If a 10% risk is acceptable what return period will have to be adopted? [10]
6. Write short notes on : [20]
- Reservoir Routing
 - Intensity-Duration-Frequency Relationship
 - Factors affecting Runoff
 - Assumptions in the Unit Hydrograph theory
-