

III B. Tech II Semester Supplementary Examinations, February-2022
WATER RESOURCES ENGINEERING-I

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**

PART -A

(14 Marks)

1. a) List the various forms of precipitation. [2M]
- b) Explain infiltration capacity curve. [2M]
- c) What is meant by separation of base flow? Explain. [2M]
- d) Differentiate between hydraulic and hydrologic routings. [3M]
- e) Define (i) transmissibility (ii) storativity. [3M]
- f) What do you mean by IUH? What are its characteristics? [2M]

PART -B

(56 Marks)

2. a) Explain the computation of average precipitation by various methods. [7M]
- b) Briefly explain the automatic type rain gauges with neat sketches. [7M]
3. a) What is evapotranspiration and explain various methods for direct measurement of evapotranspiration. [7M]
- b) For a storm of 3 hours duration the infiltration rates are as follows. If the surface run-off is 3.2cm, determine the phi-index w-index. [7M]

Time Period (mintues)	30	30	30	30	30	30
Rain fall Rate (cm/hr)	1.2	3.1	4.5	3.0	2.0	1.1

4. a) What factors should be considered in selecting a site for a stream gauging station? [7M]
- b) Define unit hydrograph. Explain the limitations and applications of unit hydrograph. [7M]
5. a) Explain flood control methods and management. [7M]
- b) If the annual flood series data for a catchment are available for 'N' consecutive years, explain the procedure to determine a flood discharge with a return period of 'T' (where T > N) by using Log Pearson Type-III distribution. [7M]
6. a) Derive an expression to determine the discharge of an un-confined aquifer and list out various assumptions. [7M]
- b) During a recuperation test the water in open well was depressed by pumping by 2 m and is recuperated by 1.5 m in 1 hour. Estimate the yield from a well of 2 m diameter under a depression head of 2 m situated in the same area. [7M]
7. a) Explain Clark's model of Instantaneous unit hydrograph. [7M]
- b) Explain Chow - Kulandaiswamy model. [7M]

