

Reg. No: 

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)**B.Tech III Year I Semester Regular & Supplementary Examinations Nov/Dec 2019****WATER RESOURCES ENGINEERING - I****(Civil Engineering)**

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a What do you understand by precipitation? Explain types and forms of precipitation. **6M**  
b Explain briefly non-automatic rain gauge. **6M**

**OR**

- 2 A catchment has five rain gauge station, in a year the annual rainfall recorded by the gauge are 78.8, 90.2, 98.6, 102.4 and 70.4 cm. For an error is 6% in the estimation of mean rainfall, determine the additional number of gauges needed. **12M**

**UNIT-II**

- 3 a List out the field measurement of infiltrometer and briefly explain. **6M**  
b What is run-off? What are the factors that affect the runoff from a catchment area? **6M**

**OR**

- 4 The infiltration capacity is a basin represented by Horton's equation as  $f=3+e^{-2t}$ . Where f is in cm/hr, time is in hours. Assuming the infiltration to take place at capacity rates in a storm of 60min duration. Estimate the depth of infiltration. a) The first 30min b) Second 30min. **12M**

**UNIT-III**

- 5 Define the following terms: **12M**  
a) Aquifer b) Aquiclude c) Aquifuge d) Specific yield e) Specific retention.

**OR**

- 6 a State and discuss assumption and limitation of Dupit's theory. **6M**  
b Explain the terms of 'storage coefficient' and 'coefficient of transmissibility'. **6M**

**UNIT-IV**

- 7 Write the following: a) Saturation capacity b) Field capacity. **12M**

**OR**

- 8 a What are the types of irrigation efficiencies? Explain it. **6M**  
b What are the factors affecting duty? How can duty be improved? **6M**

**UNIT-V**

- 9 Write for a channel, the discharge (Q), rugosity (N), critical velocity ratio (m) and the bed width -depth ratio (B/D) are given. Explain how you would design the channel using Kennedy's theory. **12M**

**OR**

- 10 What do you understand by a) Regime channel b) Initial and Permanent superior of channels **12M**

\*\*\* END \*\*\*