

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech. IV Year I Semester Regular Examinations February-2024**  
**HYDROLOGY, GROUND WATER & WELL ENGINEERING**  
(Agricultural Engineering)

**Time: 3 Hours****Max. Marks: 60**

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

**UNIT-I**

- 1 Define rainfall? List the types of raingauges and explain recording raingauges with diagram. CO1 L1 12M

**OR**

- 2 a Explain isohyetal method in detail with diagram. CO1 L1 6M  
b Write the different forms of precipitation. CO1 L3 6M

**UNIT-II**

- 3 a Explain briefly about hydrograph with its components. CO2 L1 6M  
b Explain unit hydrograph briefly. CO2 L1 6M

**OR**

- 4 a Explain s-curve method briefly. CO2 L2 6M  
b Explain concept and application of s-curve. CO2 L2 6M

**UNIT-III**

- 5 a Write short notes on water resources status of India. CO3 L3 6M  
b Explain hydrologic zones present below the ground with neat sketch. CO3 L1 6M

**OR**

- 6 a In an area of 200 ha, the water table declines by 3.5 m. If the porosity of the aquifer material is 30% and the specific retention is 15%, determine: (i) Specific yield of the aquifer, and (ii) Change in groundwater storage. CO3 L3 6M  
b The average thickness of a confined aquifer extending over an area of 500 km<sup>2</sup> is 25 m. The piezometric level of this aquifer fluctuates annually from 10 m to 22 m above the top of the aquifer. Assuming a storage coefficient of the aquifer as 0.0006, estimate annual groundwater storage in the aquifer. CO3 L4 6M

**UNIT-IV**

- 7 a Classify the types of wells. CO6 L4 6M  
b Derive equation for the steady radial flow in confined aquifers with neat sketch. CO4 L3 6M

**OR**

- 8 a Write the basic principles in design of gravel pack and recommended values of pack-aquifer (P.A) ratios. CO4 L6 9M  
b What are the desirable characteristics of good gravel materials. CO4 L5 3M

**UNIT-V**

- 9 a Write short notes on groundwater exploitation and its advantages. CO5 L3 6M  
b What are the methods for estimation of groundwater potential. CO5 L1 6M

**OR**

- 10 Briefly discuss the vertical turbine pump with neat schematic diagram. CO5 L6 12M

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