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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B.Tech II Year II Semester Regular Examinations October-2020**
HYDROLOGY, GROUND WATER & WELL ENGINEERING
(Agricultural Engineering)

Time: 3 hours

Max. Marks: 60

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

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|---|---|---|----|
| 1 | a | Describe the hydrological cycle. | 2M |
| | b | Write about divisions of subsurface water. | 2M |
| | c | Briefly explain about the groundwater chemistry. | 2M |
| | d | Explain hydro dynamic dispersion and coefficient of dispersion. | 2M |
| | e | Briefly, explain about the Darcy's law. With neat diagram | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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|---|---|---|----|
| 2 | a | Explain about the different components of hydrological cycle. With neat diagram. | 5M |
| | b | Define recording type of rain gauge and explain the types of recording type of rain gauges. | 5M |

OR

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| 3 | a | Explain about the estimation of evaporation. | 5M |
| | b | Briefly explain the evaporation & transpiration estimation methods. | 5M |

UNIT-II

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|---|---|--|----|
| 4 | a | Define aquifer and explain the classification of aquifers? | 5M |
| | b | Distinguish between: (i) Aquifer and Aquitard (ii) Aquifuge and Aquiclude (iii) Unconfined aquifer and artesian aquifer (iv) Artesian aquifer and leaky aquifer (v) Permeability and Hydraulic conductivity. | 5M |

OR

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| 5 | a | Derive the equilibrium equation for confined aquifer. With neat diagram. | 5M |
| | b | The following observations are made on a 300 mm diameter well penetrating on unconfined aquifer i. Rate of pumping = 1800 lit/min ii. Drawdown in a well 30 m away = 1.8 m iii. Drawdown in a well 60 m away = 0.6 m iv. Depth of water in a well before pumping = 50 m Determine (i) The radius of circle of influence and (ii) The coefficient of transmissibility of aquifer. | 5M |

UNIT-III

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| 6 | a | Briefly, discuss about the origin and movement of groundwater. | 5M |
| | b | Define saline intrusion and mechanism responsible for saline water intrusion. | 5M |

OR

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| 7 | a | What are the impacts of saline water intrusion and how to control the saline water intrusion? | 6M |
| | b | Briefly, discuss about the dynamic equilibrium in natural aquifers. | 4M |

UNIT-IV

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| 8 | a | Explain groundwater pollution and legislation. | 6M |
| | b | Briefly, explain about initial and boundary condition. | 4M |

OR

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| 9 | a | Explain protection zone delineation. | 5M |
| | b | Explain groundwater management studies. | 5M |

UNIT-V

- 10** **a** Derive the equation of unsteady state flow of groundwater. **5M**
 b Briefly, explain about the slug test procedure of an aquifer. **5M**
- OR**
- 11** **a** Explain about partially penetrating wells. With neat diagram **5M**
 b Derive the equation for The is method and Cooper – Jacob method. **5M**

END