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

B.Tech II Year II Semester Supplementary Examinations March 2021
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 | Define precipitation. What are the major forms of precipitation? | 2M |
| | b | Explain the global distribution of water. | 2M |
| | c | Define groundwater chemistry and list out the basic water quality parameters. | 2M |
| | d | Explain aquifer advection dispersion equation. | 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 | Describe the different methods of recording of rainfall data. | 5M |
| | b | Explain about the different methods of measurement of rainfall. With neat diagram | 5M |

OR

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|---|----------|--|----|
| 3 | a | Define evaporation and explain factors affecting on evaporation. | 5M |
| | b | Explain the evaporation measurement techniques. | 5M |

UNIT-II

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|---|----------|--|----|
| 4 | a | Explain the classification of saturated zone. | 5M |
| | b | Briefly explain about the properties of aquifer. | 5M |

OR

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| 5 | a | A aquifer of 20 m thickness. A test well of 0.5 m diameter and two observation wells at a distance of 10 m and 60 m from the test well or drill through the aquifer pumping at a rate of 0.1 m ³ /sec for a long line. The following drawdowns are stabilized in these wells first observation well 4 m. second observation well n3m. Determine (a) Coefficient of permeability and (b) Drawdown in the test well. | 5M |
| | b | Derive the equilibrium equation for unconfined aquifer? With neat diagram. | 5M |

UNIT-III

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|---|----------|--|----|
| 6 | a | Define salinity and explain the classification of groundwater composition based on total dissolved solids content. | 5M |
| | b | Explain the water quality standards and list out the different water quality parameters based on FEPA and WHO standards. | 5M |

OR

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|---|----------|---|----|
| 7 | a | Derive the equation for Ghyben-Herzberg relation for confined aquifer. | 6M |
| | b | Explain the environmental concern and regulatory requirements of groundwater quality. | 4M |

UNIT-IV

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|---|----------|---|----|
| 8 | a | Briefly explain about artificial recharge techniques. | 6M |
| | b | Explain solution of advection dispersion equation. | 4M |

OR

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|---|----------|---|----|
| 9 | a | Explain remediation schemes for saline water intrusion. | 5M |
| | b | Explain the occurrence of dispersion phenomenon. | 5M |

UNIT-V

- 10 a Briefly explain about the slug test procedure of an aquifer. 5M
- b Explain the image well theory. 5M
- OR**
- 11 a Explain about Dupit Forchheimer assumptions. 5M
- b Derive the equation for Theis method and Cooper – Jacob method. 5M

END