Subject: PCC-CVE404-T HYDROLOGY AND WATER RESOURCES Sem: 8th

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| **Week**  **1st** | **Theory** | | **Topic Covered Date and Remarks** | | |
| **Lecture- Day** | **Topic (Including Assignment/Test)** | **Date** | **HOD** | **Director- Principal** |
| 1 | HYDROLOGY: Hydrologic cycle, Precipitation: introduction, forms of precipitation |  |  |  |
| 2 | Types of precipitation, measurement of precipitation, |  |  |  |
| 3 | Selection of rain gauge station. Hyetograph and mass curve of  rainfall, |  |  |  |
| 2nd | 4 | Evaporation: Definition, factors affecting, measurement, evaporation control |  |  |  |
| 5 | Evaporation-transpiration, Infiltration. Definition, components of hydrographs, |  |  |  |
| 6 | Unit hydrograph, base flow separation, Prepositions of unit hydrograph- problems. |  |  |  |
| 3rd | 7 | Types of Aquifers – Darcy’s Law – Dupuit’s Assumptions –  Confined Aquifer – Unconfined Aquifer |  |  |  |
| 8 | Recuperation Test – Transmissibility – Specific Capacity –  Pumping Test – Steady Flow Analysis Only |  |  |  |
| 9 | Soil-water relationship and irrigation methods: Soil-water  relationship, root zone soil water |  |  |  |
| 4th | 10 | Infiltration, consumptive use, field capacity, wilting point,  available moisture in soil, Gross Command Area, |  |  |  |
| 11 | Culturable Command Area, intensity of irrigation, delta, base  period, Kor depth, core period, frequency of irrigation, |  |  |  |
| 12 | Duty of water, relation between delta, duty and base period,  irrigation requirement |  |  |  |
| 5th | 13 | Methods of Irrigation-flooding methods, border strip method, check  basin |  |  |  |
| 14 | Furrow method, assessment of irrigation water, sprinkler irrigation  system. |  |  |  |
| 15 | Canal irrigation: Component of canal distribution system, alignment of channels, losses in irrigation channels |  |  |  |
| 6th | 16 | Design discharge, silt theories and design of alluvial channels |  |  |  |
| 17 | Comparison of Kennedy's and Lacey's theories, canal section |  |  |  |
| 18 | Design procedure, Garrets and Lacey's diagrams. |  |  |  |
| 7th |  | **st**  **1 Minor Test** | | |  |
| 8th | 19 | Cross Drainage Works: Classification and their selection |  |  |  |
| 20 | Hydraulic Design Aspects of Aqueducts, Syphon Aqueducts, Super  Passage |  |  |  |
| 21 | Canal Syphon and Level Crossing, Design of Canal Transitions |  |  |  |
| 9th | 22 | Diversion Canal Head works: Various components and their functions |  |  |  |
| 23 | Layout plan, selection of site for diversion headworks, |  |  |  |
| 24 | Causes of failure of weir/barrages on permeable foundation |  |  |  |
| 10th | 25 | Bligh's creep theory, Khosla's method of independent variables, |  |  |  |
| 26 | Use of Khosla's curves, various corrections |  |  |  |
| 27 | Regulation works: Canal falls-necessity and location, development  of falls |  |  |  |
| 11th | 28 | Design of cistern element, roughening devices |  |  |  |
| 29 | Design of Sarda type fall. Design of straight Glacis fall |  |  |  |
| 30 | Off-take alignment, Cross-Regulator and Distributary Head Regulators |  |  |  |
| 12th | 31 | Devices to control silt entry into the off-taking channel |  |  |  |
| 32 | Devices to control silt entry into the off-taking channel |  |  |  |
| 33 | Silt Ejector, Canal Escapes |  |  |  |
| 13th | 34 | Silt Ejector, Canal Escapes |  |  |  |
| 35 | Design of straight Glacis fall |  |  |  |
| 36 | Design of straight Glacis fall |  |  |  |
| 14th | **2nd Minor Test** | | | |  |
| 15th | 37 | Dams: Design principles for gravity |  |  |  |
| 38 | Dams: Design principles for gravity dam |  |  |  |
| 39 | Dams: Design principles for gravity and earthen dams |  |  |  |