Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec– 2017**

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| **Code :** | **14CE2011** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WATER RESOURCES ENGINEERING** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Note down and explain the different hydrological abstractions. | CO1 | 8 |
| b. | A 30cm diameter well is fully penetrated into a confined aquifer of width b=15m. When pumped at a steady rate of 30 liters/min, the drawdowns observed in wells at radial distances of 10m and 40m are 1.5m and 1m respectively. Compute the radius of influence, permeability, transmissibility and drawdown in the well. | CO3 | 12 |
| (OR) | | | | |
| 2. | a. | Brief the “Hydrological Cycle”? | CO1 | 5 |
| b. | List out the different types of rain gauges and Explain any 3with figure. | CO1 | 15 |
|  |  |  |  |  |
| 3. |  | Explain in detail about the Unit Hydrograph, Method of Superposition and S-Hydrograph | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | List out the importance of water budgeting. | CO1 | 7 |
|  | b. | A well penetrates into an unconfined aquifer of saturated depth 110m. The discharge is 280 liter/min at 13m drawdown. Assuming equilibrium flow conditions and a homogenous aquifer, estimate the discharge at 23m drawdown. The discharge from the well where the drawdown influences are taken are not appreciable and may be taken to be equal for both cases. | CO3 | 13 |
|  |  |  |  |  |
| 5. | a. | State the factors affecting duty of water. | CO1 | 8 |
|  | b. | During a recuperation test, the water level in an open well was depressed by pumping by 2m and is recuperated by an amount of 1.6m in 80 minutes.   1. Determine the yield from a well of 3m diameter under a depression head of 4m. 2. Also determine the diameter of the well to yield 18 liters/sec under a depression head of 3.2m. | CO3 | 12 |
| (OR) | | | | |
| 6. | a. | What do you understand by conjunctive use of surface and groundwater? | CO1 | 4 |
|  | b. | Explain types of “open wells in unconsolidated formations”. | CO2 | 8 |
|  | c. | Describe about recuperation test in wells using neat sketch and equations. | CO2 | 8 |
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| 7. | a. | Point out some methods for conservation of water. | CO2 | 8 |
|  | b. | Give contrasting points about storage reservoir and balancing reservoir. | CO2 | 6 |
|  | c. | Summarize on any four methods of population forecasting with supporting formulae. | CO1 | 6 |
| (OR) | | | | |
| 8. | a. | In a town, it has been decided to provide 70 liters/day in 21st century. Estimate the domestic water requirement of this town in year 2050 by projecting the population of the town from following data.   |  |  | | --- | --- | | **Year** | **Population** | | 1925 | 2,50,000 | | 1950 | 4,80,000 | | 1975 | 5,50,000 | | 2000 | 6,38,000 | | 2025 | 6,95,000 |   Use   1. Arithmetic increase method 2. Geometric increase method 3. Incremental increase method 4. Decreased rate of growth method | CO3 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain with sketch about the “Basic Components of hydro-electric projects” ? | CO2 | 10 |
|  | b. | List out the classification of turbines and explain any one. | CO2 | 10 |

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