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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination – June – 2017**

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| **Code :** | **14CE2011** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WATER RESOURES 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. | List out the importance of water budgeting. | CO1 | 5 |
| b. | Write a short note on recording type of raingauges. | CO2 | 5 |
| c. | A well penetrates into an unconfined aquifer of saturated depth 100m. The discharge is 250 liter/min at 12m drawdown. Assuming equilibriu flow conditions and a homogenous aquifer, estimate the discharge at 18m 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 | 10 |
| (OR) | | | | |
| 2. | 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 |
|  | | | | |
| 3. | 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 2.5m and is recuperated by an amount of 1.6m in 80 minutes.   1. Determine the yield from a well of 3.5m diameter under a depression head of 4m. 2. Also determine the diameter of the well to yield 20 liters/sec under a depression head of 3m. | CO3 | 12 |
| (OR) | | | | |
| 4. | a. | With a neat sketch, explain the parts of a hydrograph. | CO1 | 10 |
|  | b. | Find the delta of a crop when its duty is 864 hectares/cumec on the field, the base period of crop being 120 days. Also find the duty of delta if the delta increases by 20% and base period is reduced by 15 days. | CO3 | 10 |
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| 5. | a. | Indicate the needs and effects of conjuctive usage of water. | CO1 | 5 |
| b. | Enlist the objectives of river training works. | CO1 | 5 |
| c. | Compare the advantages and disadvantage of open wells. | CO2 | 10 |
| (OR) | | | | |
| 6. |  | 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 |
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| 7. | a. | Summarize the steps involved in investigations for reservoir planning. | CO1 | 5 |
|  | b. | Cite and extend the limits, sources, effects and treatment for Lead. | CO1 | 5 |
|  | c. | State different types of river training works commonly used in practice. Write any five in detail. | CO1 | 10 |
| (OR) | | | | |
| 8. | a. | Elaborate on types of “open wells in unconsolidated formations”. | CO1 | 10 |
|  | b. | Enumerate and explain the basic components of hydroelectric power projects. | CO2 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Catagorize in detail the types of aqueducts based on canal cross-section. | CO2 | 5 |
|  | b. | Classify the types of water demands of estimation. | CO2 | 5 |
|  | c. | Give formulas for estimating fire demand. Also, compute the fire demand for a city having population of 1,65,000 using various formulae. | CO3 | 10 |

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