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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **17CE3058** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELEMENTS OF HYDROLOGY** | **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. | Explain the distribution of freshwater resources in the world briefly. | CO1 | 10 |
| b. | Discuss the hydrological water budge with the aid of examples. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | A catchment area has seven rain gauge stations. In a year, the annual rainfall recorded by the gauges are as follows:   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Station | P | Q | R | S | T | U | V | | Rainfall (cm) | 130.0 | 142.1 | 118.2 | 108.5 | 165.2 | 102.1 | 146.9 |   Determine i) Standard error ii) A number of additional rainguage stations for an error of 5 %. | CO3 | 10 |
| b. | Describe different methods of recording of rainfall. | CO2 | 10 |
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| 3. | a. | Discuss the importance of evaporation control of reservoirs and possible methods of achieving the same. | CO3 | 10 |
| b. | Distinguish between (i) Infiltration capacity and infiltration rate. (ii). Actual and potential evaporation. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | Discuss the various abstractions briefly from precipitation. | CO3 | 10 |
| b. | Explain the evaporation process briefly. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Explain the dilution method of flow measurement briefly. | CO4 | 10 |
| b. | Demonstrate the streamflow measurement by the area-velocity method. | CO4 | 10 |
| (OR) | | | | |  |  |
| 6. | a. | Describe briefly about backwater effect and unsteady flow effect on a rating curve. | CO4 | 10 |
| b. | Explain briefly the procedure used for extrapolating of rating curves. | CO4 | 10 |
|  |  |  |  |  |
| 7. | a. | Explain the following terms briefly as used in groundwater flow studies. (i). Specific yield. (ii). Storage co-efficient. (iii). Storage capacity. | CO5 | 10 |
| b. | The discharge from a fully penetrating well operating under a steady state in a confined aquifer of 30m thickness is 2100 l/m. The drawdown observes at two observation wells located at 15 m,and 150 m from the well are 3.2m and 0.28 m respectively. Determine transmissibility and permeability of the aquifer. | CO5 | 10 |
|  |  |  |  |  |
| (OR) | | | | |
| 8. | a. | A combined aquifer is 25m thick and 2km wide. Two observation wells located 2km apart in the direction of the flow indicate heads of 45 and 39.5 m. If K is 30m per day calculate (i). Total daily flow through the aquifer (ii). Piezometric head at an observation well located 300m from the upstream well. | CO5 | 10 |
| b. | Distinguish between (i). Influent and effluent streams (ii). Aquifer and aquitard (iii). Unconfined and leaky aquifer. | CO5 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Describe the hydrologic cycle, Explain humankind’s interference briefly in various parts of this cycle. | CO1 | 10 |
| b. | Explain the different methods of determining the average rainfall over a catchment due to a storm. | CO1 | 10 |