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



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

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| **Code :** | **18CE3052** | **Duration :** | **3hrs** |
| **Sub. Name :** | **GROUNDWATER HYDROLOGY** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Discuss the role of ground water in hydrological cycle with a neat sketch. | CO1 | 10 |
| b. | Mention the classification of soil water and their importance? | CO2 | 6 |
|  |  |  |  |  |
| 2. |  | Describe the following geological formation.   1. Aquifer and its types. 2. aquifuge. 3. aquitard. | CO3 | 16 |
|  |  |  |  |  |
| 3. | a. | Derive darcy law for one dimensional flow through homogenious porous medium? | CO4 | 10 |
| b. | Express Darcy law for three dimensional flow in non homogenious and homogenious porous isotrophic medium? | CO4 | 6 |
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| 4. |  | Derive the solution of the steady state flow problem in confined and unconfined aquifer? | CO4 | 16 |
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| 5. | a. | Derive the Advection-dispersion equation for solute transport in porous media? | CO5 | 10 |
| b. | Mention the analytical solution of the one dimensional diffusion equation for instantaneous release of mass at a particular point. | CO5 | 6 |
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| 6. | a. | Describe the direct surface methods for artificial ground water recharge? | CO6 | 10 |
| b. | During a falling head permeability test on a soil sample of 100 mm diameter and 200 mm length, the head in a stand pipe of 20m dia dropped from 0.5 m to 250 mm in 2 mn. Determine the permeability of the same. | CO2 | 6 |
|  |  |  |  |  |
| 7. |  | Explain the various methods available for estimation of the groundwater recharge? | CO6 | 16 |
|  | | | | |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Discuss on MODflow model for groundwater quality modeling and its application? | CO6 | 12 |
| b. | Compare MODpath and MT3D in groundwater modeling? | CO6 | 8 |