Roll No. | | | | | | | | | | | | | Total No. of Pages : 01

Total No. of Questions : 08

M.Tech (Civil Engg.) EL-III (2016 Batch) (Sem.–3)

GROUND WATER AND CONTAMINATION HYDROLOGY

Subject Code : MTCE -217

M.Code : 74766

Time : 3 Hrs. Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**
3. **Assume any missing data.**

1. From the basic principles, analyze the flow of groundwater through an elemental prism and establish the relationship between storage coefficient and tidal efficiencies.

2. a) Distinguish between groundwater contours and water table contours.

   b) "*The coefficient of storage of an artesian aquifer represents the entire thickness of the aquifer, whereas the coefficient of storage of a free aquifer does not*" elucidate.

3. a) Show that for a pumping well located at a distance x from a recharge source, the drw down is almost the same as that of a circular island aquifer of radius $2x$.

   b) Explain the image well theory, as applied to groundwater hydraulics.

4. From the basic principles, develop the non-equilibrium equations for unsteady radial flow into an artesian well under non-leaky and leaky conditions.

5. Develop and discuss the applicability of the RC network analog models in groundwater studies.

6. Explain the electrical resistively and seismic refraction method for groundwater prediction.

7. a) Describe the tracer test as applied to groundwater pollution studies.

   b) Propose a basic dispersion model to understand the solute transport in groundwater system. Discuss the applicability.

8. Write short notes on :

   a) Flow net

   b) Thiem's theory

   c) Groundwater recharge

   d) Scale effects of dispersion

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.