Roll No. | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech (Civil Engg.) (Sem.–3)

GROUND WATER AND CONTAMINATION HYDROLOGY

Subject Code : MTCE -217

M.Code : 74766

Date of Examination : 14-12-22

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. **Use of Non-Programmable Scientific Calculator is allowed.**

1. Explain regional groundwater resources evaluation.

2. Develop and discuss the applicability of solute transport modelling.

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

4. **Write short notes on:**

   a) Aquifer

   b) Thiem's theory

   c) Porous media

   d) Scale effects of dispersion.

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

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

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

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

   b) Explain groundwater monitoring.

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

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

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.