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ET-532(B)

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2014

ET-532(B) : GROUND WATER DEVELOPMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any* ***seven*** *questions. Each question carries equal marks. Use of scientific calculator is permitted.*

1. (a) A 200 m^3 volume of sand with 30% porosity was saturated with water. The sand column released 40 m^3 of water under the influence of gravity. Calculate the specific yield and specific retention of desaturated sand. *5*

(b) State the factors controlling the hydraulic conductivity. *5*

2. (a) What are the main tracer techniques used in ground water hydrology ? *5*

(b) What are the factors controlling the hydrologic properties of sand-stones and lime-stones ? *5*

3. (a) State the basic factors causing the salination of soils. How can you minimize the salination of soil ? 5

(b) List the observations required to take in a pumping test. 5

4. (a) Explain in brief, why in some operations like foundations and mine de-watering the wells are closely spaced. 5

(b) Explain the principle of seismic refraction method with the help of a diagram. 5

5. (a) What is the significance of exploratory borewell program ? 5

(b) What are the hydrologic factors affecting the design of a well ? 5

6. (a) What are the objectives accomplished in the well development ? 5

(b) What are the factors affecting the composition of ground water ? 5

7. (a) Name the micro-organisms and viruses present in the ground water. 5

(b) What is leaching requirement ? Explain with its importance. 5

8. (a) Give the water balance equation. Also state importance of calculating the water balance. 5

(b) Enumerate the components of ground water discharge and comment on the equations used for computing the ground water discharge. 5

9. (a) Describe the construction of Contour Bunds with their working. *5*

(b) Why is water resource management necessary ? *5*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) SAR

(b) Average Rainfall Calculation

(c) Collector Wells and Infiltration Galleries