

**SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2010**

CE 04 705 (E)—GROUND WATER HYDROLOGY

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

- I. (a) Distinguish between confined and unconfined aquifer.
 (b) Define a Leaky Aquifer.
 (c) What are the reasons for well loss ?
 (d) Write a note on recuperation test.
 (e) Distinguish between dug wells and tube wells.
 (f) Where do you prefer infiltration gallery ?
 (g) Mention any 4 important biological parameters which are important in water quality analysis.
 (h) Write a note on artificial recharge.

(8 × 5 = 40 marks)

- II. (a) Define flow net. How this is used in estimation of Ground water flow ? (7 marks)
 (b) Derive an expression for steady radial flow towards a well with usual notations. (8 marks)

Or

- (a) Explain the Laplace equation as applied to Ground water flow. What are the basic assumptions made ? (7 marks)
 (b) Define partially penetrating wells. How the general flow equation differ in this case ? What are the additional parameter you have to consider in flow equation for partially penetrating wells ? (8 marks)

- III. (a) What do you understand by multiple well system explain its role in aquifer management. (7 marks)
 (b) Explain how do you estimate T and Sy using Jacob method. What are its limitations ? (8 marks)

Or

(a) Define Transmissivity and specific yield. Explain the role of pumping test in estimating these parameters. (7 marks)

(b) Explain image well theory, what are its uses? (8 marks)

IV. (a) Explain any *two* design parameters for a tube well. (7 marks)

(b) What do you understand by well development? (8 marks)

Or

(a) Explain geophysical Investigation for ground water exploration. (7 marks)

(b) Explain failure of tube wells. (8 marks)

V. (a) How do you take water sampling for ground water quality analysis? (7 marks)

(b) Write a detailed note on recharge by water spreading. (8 marks)

Or

Write short notes on the following :—

(a) Shallow well pumps. (5 marks)

(b) Water quality for irrigation. (5 marks)

(c) Salt water intrusion. (5 marks)

[4 × 15 = 60 marks]