

Total No. of Questions :8]

SEAT No. :

**P4232**

**[4860]-617**

[Total No. of Pages :2

**M.E. (Civil)**

**WATER RESOURCE AND ENVIRONMENTAL ENGINEERING**

**c - Ground Water Modelling**

**(2012 Pattern) (Semester - II) (Elective -III) (501611)**

*Time : 3 Hours]*

*[Max. Marks :100*

*Instructions to the candidates:*

- 1) Answers to the two sections should be written in separate books.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right side indicate full marks.*
- 4) Use of calculator is allowed.*
- 5) Assume suitable data, if necessary.*
- 6) All questions are compulsory.*

**SECTION-I**

- Q1)** a) Write in detail the occurrence and movement of groundwater. **[10]**
- b) Discuss in short the aquifer system. **[5]**
- Q2)** a) Write a note on Unit Hydrograph and explain the different components consider during the calculation of Unit Hydrograph. **[10]**
- b) Discuss in short the Darcy's law. **[5]**
- Q3)** a) Write an essay on seepage from surface water artificial recharge. **[5]**
- b) Vertical distribution of sub surface water. **[5]**
- Q4)** a) Write in short the Ground water budget. **[5]**
- b) How Pump tests are carried on field. **[5]**

**P.T.O.**

## **SECTION-II**

- Q5)** a) Write in detail the limitations of groundwater development in deccan trap. [10]  
b) Limitations in ground water flow modeling. [5]
- Q6)** a) Discuss confined and unconfined aquifier, helping for ground water modeling. [10]  
b) Limitations of ground water modeling by FEM. [5]
- Q7)** a) Discuss in detail the Mathematical modeling of ground water system. [5]  
b) Sources of error in Modeling. [5]
- Q8)** a) Discuss the details of misuse of Models for ground water modeling. [5]  
b) Write a note on data preparation for the ground water modeling. [5]

*EEE*