

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – IV • EXAMINATION – SUMMER • 2013****Subject code: 741201****Date: 14-05-2013****Subject Name: Hydrological Modeling****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Differentiate between physical model and computer model of water resources system. **07**
(b) Explain watershed simulation. **07**
- Q.2** (a) Define groundwater model and write the major application of it. **07**
(b) What is sensitivity analysis? Explain how it is applied to hydrological models. **07**
OR
(b) Compare the ARS-SWAT and HEC-HMS simulation packages. **07**
- Q.3** (a) Explain the application of modeling in water resources management. **07**
(b) Write short note on a statistical models of water resources **07**
OR
- Q.3** (a) Write key modules and algorithm of MODFLOW. **07**
(b) Compare the analog simulation and digital simulation. **07**
- Q.4** (a) Discuss the features of inverse modeling for simulating the groundwater system. **07**
(b) Explain time variant groundwater flow modeling. **07**
OR
- Q.4** (a) What is FEM? Describe how it is used in water resources modeling. **07**
(b) Write the role of GIS technology in pre processing and post processing of hydrological data. **07**
- Q.5** (a) Explain multiple component models. **07**
(b) Describe the use of NRCS CN method in various types of watershed models. **07**
OR
- Q.5** (a) Write short note on a water quality models. **07**
(b) Describe USGS regression models for urban watershed. **07**
