

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2723306**Date: 31/05/2016****Subject Name: Hydrological Modeling****Time: 10:30 am to 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) Define Modeling and simulation clearly pointing out the differences between them with examples. **07**
(b) Describe the detailed procedure of calibration and verification of a mathematical model with an example **07**
- Q.2** (a) Explain the basic governing equations used in MODFLOW. **07**
(b) Describe the significance of boundary conditions, initial conditions, flow domain while you use MODFLOW. **07**
- OR**
- (b) Explain how will you determine the following quantities in MODFLOW? **07**
(1) Recharge (2) Ground water table (3) Stream aquifer interaction
- Q.3** (a) Define the following terms **07**
(1) Variance (2) Covariance (3) Central tendency (4) Skew-ness
(b) Explain the procedure of coupling in MODFLOW in the case of unsaturated flow. **07**
- OR**
- Q.3** (a) Explain **SWAT** model with governing equations used in it. **07**
(b) Explain the detailed application of GIS in the SWAT model. **07**
- Q.4** (a) Describe various numerical techniques to solve a mathematical model. **07**
(b) Describe various statistical models. **07**
- OR**
- Q.4** (a) Write a short note on (1) Histogram (2) Goodness of fit **07**
(b) Explain various parameters to adjudge the performance of a mathematical model. **07**
- Q.5** (a) Write a short note on Water shed models. **07**
(b) Write a short note on water quality models. **07**
- OR**
- Q.5** (a) Describe the procedure of identifying type distribution in a set of data with an example. **07**
(b) Describe a mathematical model to solve a flood routing problem stating governing equations, initial conditions, and boundary conditions. **07**
