

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (OLD) EXAMINATION – WINTER 2018****Subject Code: 180601****Date: 26/11/2018****Subject Name: Design Of Hydraulic Structures****Time: 02:30 PM TO 05:00 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) Explain stability requirements of a gravity dam in detail. **07**
 (b) Discuss factors governing the selection of type of dam. **07**
- Q.2** (a) The following data were obtained from the stability analysis of a concrete gravity dam: **07**
 Total overturning moment about toe = 1×10^6 kN-m
 Total resisting moment about toe = 2×10^6 kN-m
 Total vertical force above base = 50×10^3 kN
 Base width of dam = 50 m
 Slope of the d/s face = 0.8 H : 1 V
 Calculate the maximum and minimum vertical stresses to which the foundation will be subjected to. What is maximum principle stress at toe? Assume there is no tail water.
- (b) Discuss briefly the structural failure of earthen dam. **07**
- OR**
- (b) Describe swedish slip circle method for analysis of Embankment Dam. **07**
- Q.3** (a) Describe the method used for analyzing stability of slope of an earthen dam. **07**
 (b) Explain how construction operation is carried out in earthen dams? **07**
- OR**
- Q.3** (a) Explain the roller compacted concrete gravity dams. **07**
 (b) Give criteria for safe design of earth dam. **07**
- Q.4** (a) Explain design criteria for ogee spillway. Also discuss about ogee profile. **07**
 (b) Define energy dissipaters. What are the needs to provide it? **07**
- OR**
- Q.4** (a) Draw the L-section of a rectangular crest Sarda type canal fall. Explain the design features of a Sarda fall. **07**
 (b) Why canal fall is provided in canal ? Enlist different types of fall and describe Rapid falls. **07**
- Q.5** (a) What is HR and CR in the context with the canal network? Enlist function of each with neat sketch. **07**
 (b) Explain with a neat sketch the design steps of a straight glacis canal fall. **07**
- OR**
- Q.5** (a) Define spillway. What is the purpose of its provision? What are the essential requirements? Where the spillway is located? **07**
 (b) Enlist different types of stilling basin and explain any one. **07**
