

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**
