

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- VIII • EXAMINATION – SUMMER-2015****Subject Code: 180601****Date:15/05/2015****Subject Name: Design of Hydraulic Structures****Time: 10.30AM-01.00PM****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) Discuss factors governing the selection of type of dam. **07**
 (b) (i) Write a brief note on “Arch dam”. **04**
 (ii) Enumerate various factors deciding location of canal fall. **03**
- Q.2** (a) Discuss various external forces acting on a gravity dam. **07**
 (b) Describe hydraulic and seepage failure of earthen dam. **07**
- OR**
- (b) Classify spillways and discuss any one in detail. Give essential requirements of spillway. **07**
- Q.3** (a) Describe the method used for analyzing stability of slope of an earthen dam. **07**
 (b) Describe design features of chute spillway. **07**
- OR**
- Q.3** (a) Discuss seepage control in earthen dam. **07**
 (b) An overflow spillway with its upstream face vertical is to be design for a flood of 7200 cumec. Height of spillway crest above river bed is 52 m. The end walls of spillway are 75 m apart and there are 5 piers, each 2 m wide. Determine total head over the crest of spillway. Take $C = 2.2$, $K_a = 0.10$ and $K_p = 0.01$. Also draw spillway profile. **07**
- Q.4** (a) Explain various modes of failure of gravity dam. **07**
 (b) Discuss measures to control seepage through earth dam and their foundation **07**
- OR**
- Q.4** (a) Write a short note on inspection galleries and contraction joints in gravity dam. **07**
 (b) Explain analytical method for stability analysis of a gravity dam. **07**
- Q.5** (a) Describe various energy dissipation devices used below spillway in relation to the position of jump height curve (JHC) and tail water rating curve (TWRC). **07**
 (b) Describe the procedure for designing a head regulator for distributary. **07**
- OR**
- Q.5** (a) Describe with neat sketches various types of bucket type energy dissipaters. **07**
 (b) Explain stepwise procedure for designing a Sarda type fall. **07**
