

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VIII (old) - EXAMINATION – SUMMER 2018**

**Subject Code:180601**

**Date:04/05/2018**

**Subject Name:Design of Hydraulic Structures**

**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) Describe the factors governing the selection of site for a dam. **07**  
(b) Discuss various external forces acting on gravity dam. **07**
- Q.2** (a) Describe seepage control in earthen dam **07**  
(b) Explain with a neat sketch the Swedish slip circle method for stability analysis of earth dam. **07**
- OR**
- (b) Explain the method of plotting seepage line for an earth dam with horizontal filter at downstream. **07**
- Q.3** (a) Explain the principal and shear stress in concrete Dam. **07**  
(b) Describe hydraulic and seepage failure of earthen dam. **07**
- OR**
- Q.3** (a) What do you understand by the elementary profile and a practical profile of gravity dam? How is the limiting height of a gravity dam calculated? **07**  
(b) Explain different types of settlements in rockfill dam. How they can be eliminated? **07**
- Q.4** (a) Explain various modes of failure of gravity dam. **07**  
(b) Write short note on rockfill dam with sketch. **07**
- OR**
- Q.4** (a) A concrete gravity dam (Non overflow section) is given in Figure 1. Compute the following: (1) Water Pressure (2) Weight of dam and (3) Wave Pressure. Consider specific weight of Concrete = 24 KN/m<sup>3</sup>, Fetch = 12 Km, Wind velocity = 80 kmph and  $\alpha_h = 0.1$  g. **07**  
(b) Write short note on (1) Ski-jump bucket (2) Roller bucket **07**
- Q.5** (a) Discuss various functions of cross regulator. **07**  
(b) What is spillway? Discuss factors affecting its capacity. **07**
- OR**
- Q.5** (a) Explain Construction and Contraction joints in gravity dam. **07**  
(b) Discuss cavitations in an ogee spillway. **07**

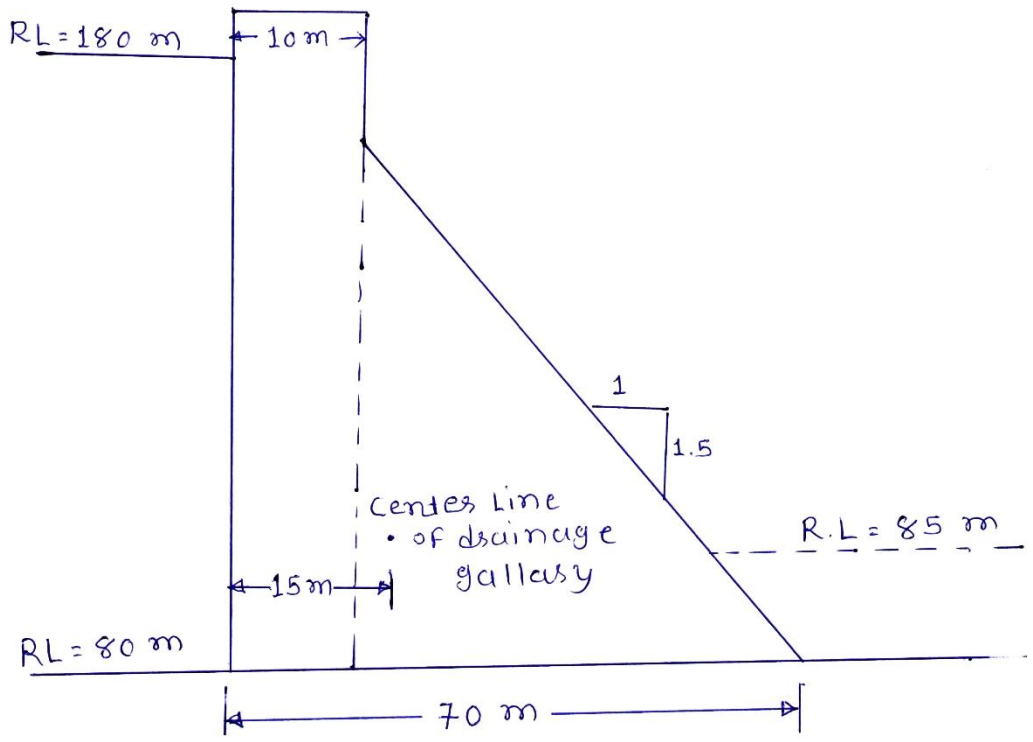


Figure : 1

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