

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (OLD) EXAMINATION – SUMMER 2019

Subject Code: 180601

Date: 15/05/2019

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) Discuss in brief earthen dam and rockfill dam. **07**
(b) Describe the factors governing the selection of site for a dam. **07**

- Q.2** (a) Describe hydraulic and seepage failure of earthen dam. **07**
(b) A flow-net is plotted for homogeneous earthen dam of height 22 m and free board 2 m. Number of potential drops and flow channels are 10 and 4 respectively. The dam has a horizontal filter of 30 m length at a downstream end and the coefficient of permeability of the dam material is 5×10^{-4} cm/sec. Calculate the discharge per m run of the dam. **07**

OR

- (b) Describe Swedish slip circle method for analysis of Embankment Dam. **07**
Q.3 (a) Enlist the various forces acting on gravity dam and discuss in detail water pressure and uplift pressure. **07**
(b) Describe stability analysis of gravity dam by graphical method. **07**

OR

- Q.3** (a) Explain Inspection gallery and Construction joints in gravity dam. **07**
(b) A concrete gravity dam (Non-overflow section) is given in Figure A on page 2. Compute the following: (1) Water Pressure (2) Weight of dam and (3) Wave Pressure. Consider specific weight of Concrete = 24 kN/m^3 , Fetch = 12 km, Wind velocity = 80 kmph and $\alpha_h = 0.1$ g **07**

- Q.4** (a) Explain mode of failure of a gravity dam. **07**
(b) Write short note on Ogee Spillway. **07**

OR

- Q.4** (a) Write short note on Bucket type Energy Dissipators. **07**
(b) Compute the discharge over an ogee weir with coefficient of discharge equal to 2.4 at a head of 2 m. The length of spillway is 100 m. The weir crest is 8 m above the bottom of the approach channel having the same width as that of the spillway. Consider velocity of approach. **07**

- Q.5** (a) What is canal fall? Why is it required to provide in a canal? **07**
(b) How can seepage be controlled in earth dams? **07**

OR

- Q.5** (a) Discuss various functions of cross regulator and distributary head regulators. **07**
(b) Explain design of Sarda Fall. **07**

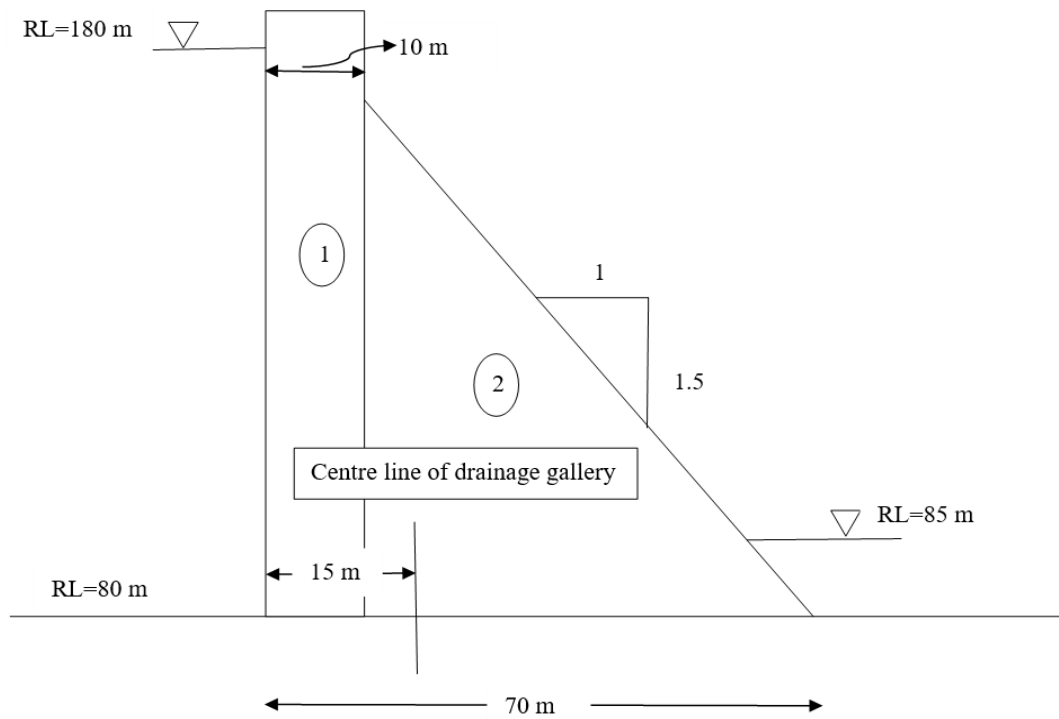


FIGURE A
