

D 10648

Name.....

Reg. No.....

**SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2010**

CE 04 702—DESIGN OF HYDRAULIC STRUCTURES

Time : Three Hours

Maximum : 100 Marks

1. (a) What is meant by gravity dams ?
(b) What are the main points to be considered while selecting a site for a gravity dam construction ?
(c) Explain briefly with neat sketches the different forces that may act on a gravity dam.
(d) Draw the sketch of a direct sluice and repair parts.
(e) Explain with the help of a diagram the various component parts, along with their functions of a dimension head works.
(f) Describe in brief various types of weirs. Distinguish clearly between a weir and a barrage.
(g) What is cross drainage works and what is their importance in a canal project ?
(h) Write short notes on :
 - (i) Syphon aqueduct.
 - (ii) Level crossing.

(8 × 5 = 40 marks)

2. Design the surplus work of a tank forming part of a chain of tanks. The catchments area of the group of tanks is 25.89 sq.km. and the area of catchment intercepted by the upper tank is 20.75 sq.km. It is decided to store water in the tank to a level of + 22.00 m. above MSL limiting the submission of foreshore lands upto a level of + 22.75 m. above MSL. The G.L. at site is + 21.00 m. and GL below the proposed surplus slopes off till it reaches + 20.00 in about 6 m. distance. The tank has a top width of 2 m. out level + 24.50, with 2 : 1 side slopes on either side. The tank bunds are designed for saturation gradient at 4 : 1 with 1 m. clear work.

Provision may be made to make kutchra regulating arrangements to store water upto MWL at times of necessity. The hard ground at site is at + 19.5 m.

(30 marks)

Design : Length of weir, crest width, base width, abutment, wings, return aprons.

Draw :

- (i) Half longitudinal section and half elevation. (10 marks)
- (ii) Half plan at top, half at foundation. (10 marks)
- (iii) Section across weir. (10 marks)