

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. - SEMESTER – VIII EXAMINATION – OCTOBER 2012****Subject code: 180601****Date: 27/10/2012****Subject Name: Design of Hydraulic Structures****Time: 02.30pm - 05.00pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

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| Q.1 | (a) | (i) Discuss in detail factors affecting selection of dam type. | 06 |
| | | (ii) What is HR & CR? Enlist functions of each? | 04 |
| | (b) | Explain the following terms: | 04 |
| | | (i) Chute blocks (ii) Sills and Dentated Sills | |
| Q.2 | (a) | Describe with neat sketches various methods adopted for controlling seepage through the body of an embankment dam and through foundation. | 07 |
| | (b) | Explain different types of settlements in a rockfill dam. How they can be eliminated? | 07 |
| | | OR | |
| | (b) | Explain various conditions for which the stability of the side slopes of an earthen dam needs to be analyzed. | 07 |
| Q.3 | (a) | (i) Write design features for good construction of embankment dam. | 04 |
| | | (ii) Show forces acting on a gravity dam with sketch. | 03 |
| | (b) | Write design principles of sarda type fall. | 07 |
| | | OR | |
| Q.3 | (a) | (i) Explain how construction operation is carried out in earthen dams? | 04 |
| | | (ii) Classify concrete dams. Briefly discuss each type. | 03 |
| | (b) | Write design principles of glacis type fall. | 07 |
| Q.4 | (a) | Discuss stepwise analytical procedure for analyzing the stability of gravity dam. | 07 |
| | (b) | Justify the statement 'Roller compacted concrete gravity dam is more economical than other dams.' | 07 |
| | | OR | |
| Q.4 | (a) | (i) Draw a neat sketch of elementary profile of dam. | 03 |
| | | (ii) Discuss the properties of concrete used in the construction of a gravity dam. | 04 |
| | (b) | Write a short note on 'cracking of concrete during the construction of gravity dam & its remedial measures'. | 07 |
| Q.5 | (a) | Define spillway. What is the purpose to provide it? What are the essential requirements? Where the spillway is located? | 07 |
| | (b) | Differentiate Jump Height Curve (J.H.C.) and Tail Water Curve (T.W.C.). What are the different possibilities of occurrence of J.H.C. and T.W.C.? | 07 |
| | | OR | |
| Q.5 | (a) | Discuss Bucket types of energy dissipators with neat sketches. | 07 |
| | (b) | (i) Define 'Energy dissipators'. What are the needs to provide it? | 03 |
| | | (ii) What is stilling basin? Why they are provided? Enlist the components of it. | 04 |
