

B.Tech. Civil (Water Resources Engineering)**Term-End Examination****June, 2012****ET-536(A) : HYDRAULIC STRUCTURES-I***Time : 3 hours**Maximum Marks : 70*

Note : Attempt any five questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. (a) What do you mean by Reservoir ? Explain various uses of a reservoir. 7
- (b) Explain various types of dams in brief. 7
2. (a) Briefly describe the foundation treatment for an earthfill dam. 7
- (b) Explain the causes of failures in earth dams. 7
3. What do you mean by arbitrary profile of a Gravity Dam ? Considering the effect of hydro-static pressure and uplift pressure, show that the base width (b) of the arbitrary profile of the Gravity Dam can be expressed as,

$$b = \frac{h}{\mu(s - c^1)}$$

for no sliding to occur. All symbols carry their usual meaning.

5+9=14

4. (a) Discuss the four stages where a head works could be located. 7
(b) What are scouring sluices ? Explain the functions of scouring sluices. 7
5. (a) Define "Exit Gradient". Explain the formula used for determining its value. 7
(b) Explain the main components of a spillway. 7
6. (a) Discuss different types of energy dissipators provided downstream of a spillway. 7
(b) Explain the importance of seepage and leakage control in embankment dams. 7
7. Write short notes on the following : $4 \times 3\frac{1}{2} = 14$
(a) Mass curve
(b) Reservoir in series and parallel
(c) Bligh's creep theory
(d) Conjugate depth
8. Differentiate between the following : $4 \times 3\frac{1}{2} = 14$
(a) Rigid and Non-rigid dams
(b) Retarding basin and storage reservoir
(c) Weirs and Barrages
(d) Firm yield and Design yield
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