

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00612

June, 2019

ET-536(A) : HYDRAULIC STRUCTURES - I

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks.

1. (a) What do you mean by "Mass Curve" and how is it prepared ? 7
- (b) Discuss the impact of Dams and Reservoirs on the environment. 7
2. (a) Distinguish between a low gravity dam and a high gravity dam. 5
- (b) Derive the expression used for such a distinction. 5
- (c) Determine the limiting height of a low gravity dam of concrete, taking specific gravity of concrete as 2.36 and allowable compressive stress as 3.36 t/m^2 . 4

3. (a) State the conditions which are essential for the formation of a hydraulic jump. 7
- (b) Discuss in detail as to how you will test the stability of an earth dam constructed with cohesive soils. 7
4. (a) Explain Khosla's theory for design of weir floors on permeable foundations. How do you apply corrections for
- (i) thickness of floor,
- (ii) mutual inference of piles, and
- (iii) slope of floor ? 7
- (b) Describe the considerations for selecting the site for a weir or barrage. 7
5. (a) Explain the various types of fish ladders with their general requirements. 7
- (b) Discuss the advantages and disadvantages of locating headworks in a boulder or a trough stage. 7
6. (a) Describe the different types of drainage facilities provided in an earthen dam. 7
- (b) Discuss the different flow measuring devices. 7

7. Write short notes on the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Grouting
- (b) Components of Spillway
- (c) Seepage and Leakage Control in Embankment Dams
- (d) Drainage Galleries

8. Differentiate between the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Rigid and Non-rigid dams
 - (b) A flood control reservoir and A multipurpose reservoir
 - (c) Entrance channel and Exit channel of spillways
 - (d) Exit gradient and Safe exit gradient
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