B.Tech. Civil (Construction Management)

Term-End Examination

June, 2018

00553

ET-535(B) : HYDRAULIC STRUCTURES

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) Describe the considerations for the selection of top width of an earth dam.   7

2. What do you mean by the "Arbitrary Profile of a Gravity Dam" ? Derive expressions for normal, principal and shear stress at the base.   5+9

3. (a) Discuss the advantages and disadvantages of locating headworks in a boulder or a trough stage.   7

    (b) What is a divide wall ? Explain its function.   7

4. (a) Using Lacey's basic regime equations, show that

$$R = 1 \cdot 35 \; (q^2/f)^{1/3},$$

where all the terms have their usual meaning. 7

(b) Describe Kennedy's method of channel design when Q, N, m and B/D ratio is given. 7

5. (a) What do you mean by Flexibility and Sensitivity of an outlet ? Derive the relation between these two. 7

(b) Describe various types of canal lining with their respective advantages and disadvantages. 7

6. (a) Explain the design criteria of a "Venturi Head Regulator". 7

(b) Discuss the methods available for controlling entry of silt into a canal. 7

7. Write short notes on the following : $4 \times 3\frac{1}{2} = 14$

(a) Super Passage

(b) Capacity of a Canal

(c) Orientation of Canal Offtake

(d) Level Crossing

8. Differentiate between the following : $4 \times 3\frac{1}{2} = 14$

(a) Alluvial and Non-alluvial canals

(b) Modular and Non-modular outlets

(c) Aqueduct and Super passage

(d) Canal head regulator and Cross regulator

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