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ET-535(B)

B.Tech. Civil (Construction Management)

Term-End Examination

00542

June, 2019

ET-535(B) : HYDRAULIC STRUCTURES

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Support your answers with neat sketches.*

1. (a) What you mean by "Mass Curve" ? Explain its uses. 7

(b) With the help of a neat sketch, describe the sediment accumulation in a typical reservoir. 7

2. (a) What do you understand by the elementary profile of a gravity dam ? 7

(b) Derive the expressions for determining base width of such a dam based on

(i) stress criterion

(ii) sliding criterion. 7

3. (a) "A spillway is a safety valve in a dam." Justify this statement. 7

(b) Define exit gradient. Explain the formula used for determining its value. 7

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

$$R = 1{\cdot}35\left(\frac{q^2}{f}\right)^{1/3}$$

where all the terms have their usual meaning. 7

(b) Describe Kennedy's method of channel design when Q, N, m and S are given. 7

5. (a) Describe various types of canal linings with their respective advantages and disadvantages. 7

(b) How do you select the type of module for an outlet ? Discuss in brief with respect to relevant factors. 7

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

(b) Define uplift pressure. Discuss the procedure of providing safety against piping as per "Bligh Creep Theory". 7

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

(a) Reservoir Capacity

(b) Super passage

(c) Economics of Canal Lining

(d) Canal Fall

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

(a) Diversion headworks and Storage headworks

(b) Low and High gravity dams

(c) Aqueduct and Syphon aqueduct

(d) Suspended and Bed loads