

B.Tech. Civil (Construction Management)

00115

Term-End Examination

June, 2010

ET-535(B) : HYDRAULIC STRUCTURES

Time : 3 hours

Maximum Marks : 70

Note : Answer any five questions. All questions carry equal marks. Use of Calculator is allowed.

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1. (a) Explain the following :
 - (i) Reservoir trap efficiency 4
 - (ii) Dead and useful storages 3
 - (b) Explain the use of mass curve method for computation of reservoir storage capacity 7

 2. (a) What are the causes of failure of a gravity dam ? 7
 - (b) What do you understand by combination of loads in the design of a gravity dam ? 7

 3. (a) Describe various types of earth dams. On what consideration will you select top width of an earth dam ? 7
 - (b) How will you test the stability of an earth dam constructed of a cohesive soil ? 7

4. (a) What is a barrage ? How does it help in raising the water level or pond level ? 7
- (b) Describe two types of canal headworks. 7
5. (a) Define the following terms : 4
- (i) uplift pressure
- (ii) piping
- (b) Describe Khosla's theory for design of weir floors on permeable foundations. 10
6. (a) Differentiate between : 4
- (i) alluvial and non-alluvial canals
- (ii) inundation and permanent canals
- (b) Design a concrete lined channel to carry a discharge of $350 \text{ m}^3/\text{s}$ at a slope of 1 in 6400. The side slopes of the channel may be taken as 1.5 H : 1 V. The value of n for lining material may be taken as 0.013. Assume limiting depth of channel as 4.0 m. 10
7. (a) Discuss the requirements of a good outlet. 7
- (b) What are the considerations for selecting a suitable type of cross-drainage work at a given site ? Explain in brief. 7

8. Write short notes on the following : **4x3.5=14**

- (a) distributory head regulator
 - (b) factors affecting economics of a canal lining
 - (c) canal distribution system
 - (d) level crossing
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