

**B.Tech. Civil (Construction Management)****Term-End Examination****December, 2012****ET-535(B) : HYDRAULIC STRUCTURES***Time : 3 Hours**Maximum Marks : 70*

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

1. (a) Explain different types of reservoirs in brief. 7  
(b) Explain the Swedish circle method of stability analysis for  $C - \phi$  soils. 7
2. (a) Discuss various load combinations in the design of a gravity dam. 7  
(b) What is a barrage ? How does it help in raising the water level or pond level ? 7
3. (a) Discuss the design considerations of weirs on permeable foundations. 7  
(b) Explain the features of Bligh Creep theory. Also describe the procedure for determining the safe floor thickness of hydraulic structures to counter uplift pressure. 7
4. (a) What do you mean by permanent canals ? Explain the advantages and disadvantages of these canals. 7

- (b) Explain the design of channel by "Lacey's Silt Theory". 7
5. (a) Describe various types of canal lining with their respective advantages and disadvantages. 7
- (b) Explain the requirements of a good outlet. 7
6. (a) What is a canal head regulator? Explain its purpose. 7
- (b) Explain the various 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) Trap Efficiency
- (b) Components of a diversion headwork
- (c) Aqueduct
- (d) Drainage behind lining
8. Differentiate between the following :  $4 \times 3\frac{1}{2} = 14$
- (a) Alluvial and Non-alluvial canals
- (b) Siphon Aqueduct and Canal Siphon
- (c) Modular and Non-Modular outlets
- (d) Flexibility and sensitivity of an outlet
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