

**B.Tech. Civil (Water Resources
Engineering)**

Term-End Examination

December, 2006

ET-536(B) : HYDRAULIC STRUCTURES-II

Time : 3 hours

Maximum Marks : 70

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

1. (a) Draw a typical layout of a canal distribution system and explain the functions of its various parts. 7
 - (b) What do you mean by cross drainage works ? Explain their necessity. 7
 2. (a) Using Lacey's basic regime relations, show that $P = 4.75 \sqrt{Q}$ where all the terms have their usual meaning. 7
 - (b) Design an irrigation channel in alluvial soil according to Lacey's silt theory, given the following data : 7
- Longitudinal slope of channel, $S = \frac{1}{4900}$

Lacey's silt factor, $f = 1.00$

Channel side slopes, $S = \frac{1}{2} : 1$

- 3.** (a) Explain the advantages and disadvantages of concrete lining. 7
- (b) Explain the circumstances under which Sarda type fall is best suited. Also describe its salient features. 7
- 4.** (a) What do you mean by sensitivity of an outlet ? Show that sensitivity (S) and flexibility (F) can be expressed as $S = nF$. 7
- (b) Explain the various design parameters of an outlet. Discuss the significance of each. 7
- 5.** (a) Describe the functions of a cross regulator. 7
- (b) How would you orient a canal offtake to minimise silt entry into the canal ? 7
- 6.** (a) Describe the particular river training measures required for stabilisation of a river channel. 7
- (b) Explain the measures of controlling floods in a river. 7

7. Differentiate between the following : $4 \times 3 \frac{1}{2}$
- (a) Watershed and Side slope canals
 - (b) Kennedy's and Lacey's silt theory
 - (c) Canal and Distributory Head Regulator
 - (d) Levees and Flood walls
8. Write short notes on the following : $4 \times 3 \frac{1}{2}$
- (a) Canal Alignment
 - (b) Sediment Transport
 - (c) Methods of River Training
 - (d) Design of Guide Banks