No. of Printed Pages : 3

ET-536(B)

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

01000

June, 2016

ET-536(B) : HYDRAULIC STRUCTURES – II

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Support your answers with examples and neat diagrams, wherever necessary. Use of scientific calculator is permitted. Assume appropriate data, if not given.*

1. (a) Give an account of investigations and surveys required while planning an irrigation canal project in a given tract of land. 7

(b) Discuss the factors governing selection of alignment of the main canal and its branches. 7

2. (a) Discuss various factors to be considered while selecting a suitable type of cross drainage work at a given site, citing field examples. 7

(b) List different design parameters of an outlet. Discuss the significance of each parameter. 2+5=7

3. (a) Bring out the limitations of Kennedy's and Lacey's silt theories and explain their implications. *4+3=7*

(b) What are sluices and where are they provided ? Give sketches to explain. *7*

4. (a) Design a regime channel for a discharge of 50 cumecs and silt factor 1·1, using Lacey's theory. *7*

(b) How is a reservoir operated for flood control ? *7*

5. (a) Enumerate various types of canal drops which have been used since olden days. Explain in detail the design principles governing any one of the modern types. *2+5=7*

(b) What is the purpose of a silt excluder ? Explain various functions of it with the help of a neat sketch. *2+5=7*

6. (a) What particular river training measures are required for the following ? Explain in detail. *3×3=9*

(i) Guiding the flow near hydraulic structures

(ii) Stabilization of a river channel

(iii) Flood protection

(b) What are canal locks ? Briefly give their hydraulics. *5*

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

(a) Syphon and Super passage

(b) Side slope and Longitudinal slope of a canal

(c) Flood diversion and Channel improvement

(d) Initial and Final flow regimes

8. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Types of Lining

(b) Operation and Maintenance of Irrigation System

(c) Tractive Force Approach for Channel Design

(d) Warabandi

(e) Spurs