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ET-535(B)

00224

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2013

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) Discuss the various uses of reservoirs. Differentiate between conservation and flood control projects. 7

   (b) What is an arbitrary section of a gravity dam ? Discuss its design procedure in brief. 7

2. (a) What are the various types of earth dams ? Discuss the various types of failures in earth dam. 7

   (b) What are the differences found between a weir and a barrage ? How do they help in raising the water level or pond level ? 7

3. (a) What are the functions of canal head regulators ? How are the crest levels of canal head regulators fixed ? What is the pond level in the barrage ? 7

(b) What aspects on floor on permeable foundations can be assessed by Khosla's curves ? What do you understand by exit gradient and safe exit gradient ? 7

4. (a) What are the main canals, branch canals, distributaries and minors in canal irrigation system ? Discuss the operation and maintenance of water courses. 7

(b) Design an irrigation channel to supply 50 cumec of water at a slope of 1/5000 with Kutter's N=0.025, and m=0.95, using Kennedy's theory. 7

5. (a) Design a concrete lined canal section for the following data Q=30 cumec, s=1/6000, side slope 1.25 : 1 mannings n=0.012. 7

(b) What are sluices and where are they provided ? Describe a pipe as a non-modular outlet. What is the meaning of setting of an outlet ? 7

6. (a) What are the important considerations for selecting a suitable type of cross-drainage works ? Give some fixed examples. List the various design parameters for cross-drainage works. 7

(b) Why is a cistern element needed ? Where is it located on a canal fall ? Explain the most efficient type of energy dissipation system. 7

7. (a) Where is the Canal Head regulator located ? What are the design criteria for distributary head regulators ? 7

(b) Design a venturi head regulator for the following conditions : 7

Parent Canal : Q=10cumecs bed width : 12m, water depth : 1.2m, bed level : 100m

off-taking canal : Q=0.8 cumec, bed width : 3 m Water depth : 0.5m.

8. Write short notes on ***any four*** of the following : **4x3½=14**

(a) Adverse Impact of Large dams and reservoirs.

(b) Components of a diversion head words.

(c) Bligh's Theory

(d) Seepage losses

(e) Syphon Aqueduct

(f) Barrages