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ET-535(B)

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B.Tech. Civil (Construction Management)

Term-End Examination

December, 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.

1. (a) List different zones of storage in Reservoir. 4

   (b) What do you understand by Mass inflow curve and Demand Curve? Explain Method of calculating Reservoir capacity for a Specific yield from the Mass inflow Curve. Also explain how you would determine Safe yield from a Reservoir of given Capacity ? 10

2. (a) Explain modes of failure and criteria for stability requirements of gravity dam. 6

   (b) What do you understand by elementary profile of a gravity dam? Derive expression for determining base width of dam based on: 8

   (i) Stress criterion

   (ii) Sliding criterion.

   Also derive expressions for principal and shear stress at the base of the dam.

3. (a) Explain with the help of a labelled sketch the components of a zoned embankment dam with their functions. 7

(b) Discuss in brief the causes of failure of an earth dam. 7

4. (a) Explain with the help of a diagram, the various component parts, and their functions, of a diversion headwork. 10

(b) Explain how do you determine" the Safe floor thickness of hydraulic structure to counter uplift pressure ? 4

5. (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

6. (a) Explain the advantages and disadvantages of concrete lining. 7

(b) Design a lined canal to carry a discharge of 120 cumecs. The velocity of flow may be taken as 2 m/s. Take the side slope as 1:1. Assume n = 0.018 and bed slope as 1 in 3000. 7

7. (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

8. Differentiate between the following : 4x3½=14

(a) Kennedy's and Lacey's silt theory

(b) Canal and Distributory Head Regulator

(c) Levees and Flood walls

(d) Alluvial and non alluvial canals