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ET-535(B)

B.Tech. Civil (Construction Management)

00292 **Term-End Examination**

December, 2016

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 allowed.*

1. (a) What do you mean by storage zone ? Show its different levels with diagrams. 7

(b) Write a short note on elevation storage curve with its environmental effects. 7

2. (a) What are the design requirements of a gravity dam ? 7

(b) What are the various failures of earth dams ? 7

3. (a) Define venturi head regulator with its design criteria. 7

(b) Design a venturi head (regulator), given that :

(i) Discharge in parent canal = 12 cumecs

Bed width = 15 m

Water depth = 1·5 m

Bed level = 100·00 m

(ii) Discharge in off-taking canal = 1 cumec

Bed width = 3 m

Water depth = 0·6 m *7*

4. (a) What are the classifications of weirs ? Explain all of them with neat diagrams. *9*

(b) An adjustable orifice semi-module is to be fitted in a distributary, for the following conditions :

Discharge of the outlet = 0·30 cumecs

Working head = 0·65 m

F.S.L. of the distributary = 101·60 m

Bed level of the distributary = 100·00 m

Design the module. *5*

5. (a) Explain level crossing with layout plan. *7*

(b) Calculate Drainage waterway and Canal waterway of syphon aqueduct from the following data :

	Drain	*Canal*
Discharge (cumec)	400	40
Bed level (m)	148·00	150·00
Bed width (m)	—	25·00

Assume all other necessary data. *7*

6. (a) Explain about cistern elements with necessary diagram. *6*

(b) Given H = 1 m, d = 10 cm, f = 0·012, L = 3 m. Determine the discharge capacity of the pipe drop spillway. *8*

7. (a) Give the differences between conveyance, distribution and power canal. *6*

(b) What is the magnitude of tractive force with respect to its values on the sides of a canal ? *8*

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

(a) Exit Gradient

(b) Capacity of Canal

(c) Distribution Canal

(d) Cross Regulator

(e) Trap Efficiencies
