

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2017

00875

ET-536(B) : HYDRAULIC STRUCTURES – II

Time : 3 hours

Maximum Marks : 70

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted. Assume any suitable data, if necessary.*

1. (a) List various types of canal systems. Differentiate between alluvial and non-alluvial canals. 7
- (b) Explain the following in 50 words each : 7
 - (i) Top width of banks
 - (ii) Beam width
 - (iii) Inspection Road
 - (iv) Spoil Banks
2. (a) How do syphon aqueducts differ from ordinary aqueducts ? What are their respective mechanics of flow ? 7
- (b) What do you mean by cross-drainage works ? Also write down the necessity of cross-drainage works. 7

3. Design a syphon aqueduct for the following data : 14

	Drain	Canal
Discharge (cumecs)	400	40
Bed level (m)	148.00	150.00
Canal FSL (m)	-	152.00
Bed width (m)	-	25.00
Canal side slopes (H : V)	-	1.5 : 1
Drain HFL (m)	150.05	-

The general terrain level is 150.00 m.

4. (a) Design an irrigation channel to supply 50 cumecs of water at a slope of $1/5000$ with Kutter's $n = 0.025$ and $m = 0.95$, using Kennedy's theory. 7
- (b) Explain Lacey's silt theory. Also compare Kennedy's and Lacey's theories. 7
5. (a) Describe any two canal linings with their respective advantages and disadvantages. 7
- (b) What are the various design parameters of an outlet? Discuss the significance of each. 7
6. (a) Describe in brief various roughness devices for energy dissipation. 7
- (b) What do you mean by falls? Explain various types of falls with neat sketches. 7

7. (a) How is a distributary head regulator different from a canal head regulator ? Explain. 7
- (b) Briefly describe the silt excluders and silt ejectors. Also draw their neat diagrams. 7
8. What do you understand by river training ? What are the objectives of river training ? Explain. 14
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