

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2170609

Date: 26/11/2018

Subject Name: Irrigation Engineering

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) What are the benefits and ill effects of irrigation?	03
	(b) What is irrigation efficiencies? Explain any two efficiencies.	04
	(c) Compare surface irrigation with sprinkler irrigation.	07
Q.2	(a) Explain the different stages of river.	03
	(b) Discuss on equipotential lines and stream line.	04
	(c) Explain the Bligh's creep theory with limitations and design criteria.	07
	OR	
	(c) Discuss the various forces acting on gravity dam with sketches.	07
Q.3	(a) Give the functions of drainage gallery in dam section.	03
	(b) Define and explain phreatic line in earthen dams.	04
	(c) List out the components of earthen dam with detail functions.	07
	OR	
Q.3	(a) What is stilling basin? Why they are provided?	03
	(b) Explain radial gate and drum gate for spillway.	04
	(c) Discuss use of hydraulic jump, as an energy dissipation device in design of hydraulic structure.	07
Q.4	(a) Differentiate between alluvial and non-alluvial canal.	03
	(b) Explain the term "most economical cross sections in canal"	04
	(c) A lined canal with manning's $n=0.012$ is laid at a slop of 1:2000. It is required to carry flow of 30 cumecs. The side slops of canals are laid at 1V:2H. What will be the uniform flow depth in canal? Assume a triangular section with rounded circular bottom having radius equal to depth of flow.	07
	OR	
Q.4	(a) Give necessity of lining in canal.	03
	(b) Give the comparison between Kennedy's and Lacey's theory.	04
	(c) A trapezoidal irrigation canal with side slop 1.5 H to 1 V is proposed to be lined with bricks to reduce seepage losses. It is required to carry discharge of 20 cub m per second of water. Find the wetted perimeter for minimum amount of lining and required bed slope. The value of Manning's N is given as 0.015 and it is stipulated that average velocity cannot exceed 1 m/sec.	07
Q.5	(a) Discuss on canal escapes.	03
	(b) Differentiate aqueduct and canal syphon.	04
	(c) Define a canal fall. Why is it necessary to provide a fall in a canal?	07
	OR	
Q.5	(a) Give the functions of cross regulator and head regulator.	03
	(b) Explain different layout of tile drains with sketch.	04
	(c) Write a note on land reclamation with its measures.	07
