

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (OLD) EXAMINATION – WINTER 2018****Subject Code: 170602****Date: 19/11/2018****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.

- Q.1** (a) Define duty and delta. Derive a relationship between duty and delta for a given base period. Also briefly discuss factors affecting duty. **07**
- (b) Define diversion headwork. Describe the function of each component of diversion head work with a neat diagram. **07**
- Q.2** (a) Differentiate between the following: **07**
- (i) Sprinkler Irrigation and Drip Irrigation
- (ii) Weir and Barrage
- (b) Explain various irrigation efficiencies. **07**
- OR**
- (b) Discuss classification of soil moisture. Also explain significance of field capacity and permanent wilting point in deciding frequency of irrigation. **07**
- Q.3** (a) Explain Lacey's silt theory. Using Lacey's basic regime equations derive an expression for scour depth. **07**
- (b) What do you mean by lining a canal? What are the advantages of it? **07**
- OR**
- Q.3** (a) Describe Khosla's theory elaborating its salient features clearly with flownet. **07**
- (b) Discuss causes of failure of weirs and explain measures to prevent such failures. **07**
- Q.4** (a) What do you mean by water logging of soil? How would you prevent it? **07**
- (b) A water course has CCA of 2600 hectares, out of which the intensities of irrigation for perennial sugarcane and rice crops are 20% and 40% respectively, The duty for these crops at the head of water course are 750 hect/cumec and 1800 hect/cumec respectively, Find the discharge required at the head of water course if the peak demand is 20% higher than average requirement. **07**
- OR**
- Q.4** (a) Explain the necessity of canal fall. Why is the 'Cistern' provided below the canal fall? **07**
- (b) Design an irrigation canal to carry discharge 5 cumecs. Take $m=1.0$, $N= 0.0225$, and B/D ratio = 4.40. **07**
- Q.5** (a) Differentiate between the Aqueduct and siphon Aqueduct and mention the functions of cross regulator. **07**
- (b) What are the different types of irrigation schemes? Discuss the salient features of each. **07**
- OR**
- Q.5** (a) Write short note on **07**
- (1) Silt control devices (2) Canal escape
- (b) Explain border strip method of irrigation with neat sketch. **07**
