

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (Old) EXAMINATION – WINTER 2019****Subject Code: 170602****Date: 26/11/2019****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) Explain with neat sketch the components of diversion headwork. **07**
(b) Discuss the suitability, advantages and limitation of Drip and Sprinkler irrigation techniques. **07**

- Q.2** (a) Discuss causes, effects and controls of Water Logging. **07**
(b) Derive the relation between Duty, Delta and Base period. Also, discuss briefly the factors affecting and methods to improve duty. **07**

OR

- (b) Following particulars were recorded from an agricultural field growing wheat: i) Field Capacity=25%, wilting point=9%, permissible depletion of moisture content=55 %, root zone depth= 2.1 m, dry unit weight of soil= 1400 Kg/m³, effective rainfall= 25 mm, daily consumptive use= 5.8 mm. Find the net and field irrigation requirement if loss in field application is 12 %. What is the frequency of irrigation? **07**

- Q.3** (a) Describe Khosla's theory and give corrections for i) thickness of floor ii) sloping floor. **07**
(b) Discuss the necessity and advantages of canal lining. **07**

OR

- Q.3** (a) Explain the Kennedy's theory of irrigation channel design. **07**
(b) A channel section is to be designed for the following data: discharge=7 cumecs, Silt factor, $f = 0.9$, Side slope= $\frac{1}{2}$ (H): 1 (V). Also determine the bed slope of the channel. **07**

- Q.4** (a) Explain following in context of irrigation: (i) Distribution efficiency (ii) Application efficiency (iii) Project efficiency **07**
(b) Describe with suitable sketch the layout of barrage and discuss each component. **07**

OR

- Q.4** (a) What is consumptive use of water? Describe any one method of determining the consumptive use of water. **07**
(b) Describe with neat sketches various methods adopted for controlling seepage through the body of an embankment dam and through foundation. **07**

- Q.5** (a) Explain the working of aqueduct and siphon aqueduct with neat sketch. **07**
(b) Discuss the effects of uplift pressure at the floor of the culvert and methods to reduce it. **07**

OR

- Q.5** (a) Describe the type of canal falls with sketch. Discuss suitability of each method and the need of cistern below the canal fall. **07**
(b) Describe the following: i) Silt Control Devices ii) Sheet Piles **07**
