Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – SUMMER • 2014

Subject Code: 170602 **Date: 03-06-2014**

Subject Name: Irrigation Engineering

Time: 02:30 pm - 05:00 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)** Enumerate different methods of irrigation and discuss the merits and demerits of each method. **07**

(b) Draw neat sketch of diversion headwork and explain salient features of each. Discuss the need of fish ladder. **07**

Q.2 **(a)** Derive relation between Duty and Delta and find out the duty of water if crop requires total depth of 90 cm of water for base period of 120 days. **07**

(b) Define exit gradient and give its permissible values for different soil. Discuss the procedure for finding pressure at different key points **07**

OR

(b) List out limitations of Bligh'y creep theory and Determine thickness of floor at 10m and 15m from u/s end if b=28m, d1=5m,d2=6m and H=4m. **07**

Q.3 **(a)** Compare the Bligh'y creep theory and Khosla's theory. Describe corrections for (i) thickness of floor (ii) sloping floor as per Khosla's theory **07**

(b) Describe different cross drainage work and list out different design features of the cross drainage work. **07**

OR

Q.3 **(a)** Differentiate between the following (i) Sprinkler Irrigation and Drip Irrigation (ii) Weir and Barrage **07**

(b) Calculate the discharge of water course having CCA=1400 hectare for following data **07**

Crop type	Intensity of Irrigation	Kor period	Kor depth
A	45 %	20 days	10 cm
B	35 %	15 days	12 cm

Q.4 **(a)** Why canal falls are provided? Schematically describe any two types of falls commonly used in irrigation. **07**

(b) What is canal lining? Why is it necessary? Give the advantages of it? **07**

OR

Q.4 **(a)** State the causes of failure of weirs founded on permeable soils and explain their remedies **07**

(b) What do you mean by water logging of soil? Discuss its effect and give the measures to prevent it. **07**

Q.5 **(a)** Describe the factors affecting the selection of a suitable type of aqueduct and schematically show the different forces likely to act on different aqueducts. **07**

(b) Explain functions of cross regulator and head regulator **07**

OR

Q.5 **(a)** Compare Lacey's and Kennedy's silt theory and design a channel in alluvial soil using Lacey's theory for Q=15m^{3}sec, f=1.0 and slope 0.5:1. **07**

(b) What is function of Canal escape? Discuss different types of Canal escapes **07**