

**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's creep theory and Determine thickness of floor at 10m and 15m from u/s end if  $b=28m$ ,  $d_1=5m$ ,  $d_2=6m$  and  $H=4m$ . **07**
- Q.3** (a) Compare the Bligh's 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**

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