

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**PDDC SEMESTER-VI • EXAMINATION – WINTER - 2016**

**Subject Code: X60603****Date: 26/10/2016****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) Discuss the necessity of irrigation and scope of irrigation in India. What are the benefits and ill effects of irrigation? **07**
- (b) Explain with a neat sketch the drip irrigation method. **07**
- Q.2** (a) Explain the relationship between duty and delta. Give typical values of delta for some kharif and rabi crops. **07**
- (b) What are causes of water logging in an irrigation command area? Suggest suitable remedial measures to control water-logging. **07**
- OR**
- (b) Draw a typical layout of a diversion headwork scheme. Why marginal bunds are constructed on upstream side of diversion headwork? **07**
- Q.3** (a) What are the main causes of failure of a diversion headwork? **07**
- (b) Explain the various steps involved in design of a sloping glacis weir. **07**
- OR**
- Q.3** (a) Explain Blighs theory for design of headwork. What are the limitations of Blighs theory? **07**
- (b) Explain the corrections for (i) floor thickness (ii) mutual interference and (iii) slope at key points while design weir using Khosla's theory. **07**
- Q.4** (a) Explain the seepage through a zoned type of earth dam. Discuss the stability of earth dam under steady seepage and sudden drawdown condition. **07**
- (b) What are causes for failure of earth dams? Discuss the measures for safe drainage in earth dams. **07**
- OR**
- Q.4** (a) Which forces are acting on a gravity dam? Discuss the various load combinations for gravity dam design. **07**
- (b) Explain the steps involved in design of spillways. How energy dissipation is carried out on downstream of spillway? **07**
- Q.5** (a) Explain with sketches the elementary profile and practical profile of a gravity dam. **07**
- (b) Explain the Kennedy's and Lacey's silt theory for unlined canals. **07**
- OR**
- Q.5** (a) With a neat sketch explain the difference between an aqueduct and a level crossing. **07**
- (b) Explain the functions of a canal fall and canal escape. **07**

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