

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3170609****Date: 22-05-2024****Subject Name: Irrigation Engineering****Time: 02:30 PM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

		<b>MARKS</b>
<b>Q.1</b>	(a) What are ill effects of water logging?	<b>03</b>
	(b) Discuss engineering aspect of scope of irrigation engineering.	<b>04</b>
	(c) Enlist various methods of irrigation. Also explain methods of controlled flooding in detail.	<b>07</b>
<b>Q.2</b>	(a) Define following terms: (a) Field capacity (b) Ultimate wilting point (c) Base period	<b>03</b>
	(b) Discuss water pressure and uplift pressure forces acting on gravity dam.	<b>04</b>
	(c) Design a lined concrete channel, trapezoidal in section to carry a discharge of 300 cumec at a slope of 35 cm/km. the Manning's coefficient is 0.015 and side slopes are 1.5:1. Take limiting velocity is 1.5 m/sec.	<b>07</b>
	<b>OR</b>	
	(c) Describe khosla's theory of design of weir on permeable foundation. Also give important of exit gradient.	<b>07</b>
<b>Q.3</b>	(a) Enumerate advantages of drip irrigation system.	<b>03</b>
	(b) Derive a relationship between duty, delta and base period.	<b>04</b>
	(c) Describe various modes of failure of gravity dam.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Give functions of distributary head regulator.	<b>03</b>
	(b) What are the factors that affect alignment of a canal?	<b>04</b>
	(c) Define land reclamation. Explain measures adopted for land reclamation.	<b>07</b>
<b>Q.4</b>	(a) Enlist various methods of assessment of irrigation water. Explain any one of them in detail.	<b>03</b>
	(b) Write a short note on balancing depth of a canal.	<b>04</b>
	(c) List out various devices used to reduce silt entry onto off-taking channel. Discuss King's vanes and Gibb's groyne wall in detail.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Discuss aqueduct and super passage as a cross drainage works.	<b>03</b>
	(b) Define diversion headworks. Why diversion headwork is provided?	<b>04</b>
	(c) Describe various seepage control measures of water through embankment and its foundation.	<b>07</b>
<b>Q.5</b>	(a) Write a brief note on silt ejector.	<b>03</b>
	(b) What are requirements of a good canal outlet?	<b>04</b>
	(c) Discuss various factors governing selection of type of dam.	<b>07</b>

**OR**

- Q.5** (a) Discuss following components of diversion head works briefly. **03**  
(a) Divide wall (b) Fish ladder.
- (b) Explain various types and necessity of canal lining. **04**
- (c) Define cross drainage works. Discuss factors should be considered while selecting the most suitable type of cross drainage work. **07**

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