

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3170609****Date:08/06/2022****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.

MARKS

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|------------|---|-----------|
| Q.1 | (a) Distinguish between a weir and a barrage | 03 |
| | (b) Enumerate various types of lining. Also give necessity of canal lining. | 04 |
| | (c) Discuss scope of irrigation engineering | 07 |
| Q.2 | (a) Why it is necessary to provide a fall in a canal? | 03 |
| | (b) Explain irrigation system based on source from which water is drawn. | 04 |
| | (c) Describe various causes of failures of a weir on pervious foundation and their control measures. | 07 |
| | OR | |
| | (c) Design lined trapezoidal shaped concrete canal in a section to carry a discharge of 350 cumec at a slope of 20 cm/km. Take Manning's coefficient as 0.017, side slope of 1.5:1 and B/D = 4. | 07 |
| Q.3 | (a) Define following terms: (1) Permanent wilting point (2) Readily available moisture (3) Intensity of irrigation | 03 |
| | (b) Enumerate important parts of a gravity dam and write brief note on drainage galleries. | 04 |
| | (c) Explain Khosla's method of independent variables. | 07 |
| | OR | |
| Q.3 | (a) Define canal outlet. Write brief note on any one type of canal outlet. | 03 |
| | (b) Discuss various factors to be considered while selecting suitable site for a dam | 04 |
| | (c) Define term duty. Also discuss various factors affecting duty of water. | 07 |
| Q.4 | (a) Write a short note on contraction joints in a dam. | 03 |
| | (b) Explain following terms for canal cross-section. (1) Berm (2) Spoil Banks | 04 |
| | (c) Discuss various reasons for hydraulic and seepage failure of earthen dams. | 07 |
| | OR | |
| Q.4 | (a) State function of following canal regulatory works. (1) King's vanes (2) Curved wings (3) Bed bars | 03 |
| | (b) Enlist various components and limitations of sprinkler irrigation system | 04 |
| | (c) Explain stepwise procedure for designing an alluvial channels using Kennedy's theory. | 07 |
| Q.5 | (a) Write functions of cross regulator. | 03 |
| | (b) Discuss various drainage systems used for effective control of water logging. | 04 |

- (c) Enumerate various forces acting on a gravity dam. Discuss uplift pressure, wave pressure and silt pressure briefly. **07**

OR

- Q.5** (a) Write a brief note on parshall flume. **03**
(b) Differentiate between: **04**
 (1) Aqueduct and super passage
 (2) Siphon aqueduct and canal siphon
(c) Describe various causes and preventive measures of water logging. **07**
