

Unit IV

7. Discuss Ogee spillway, siphon spillway and side channel spillways and their suitability. **15**
8. An overflow spillway passes a discharge of 7.83 cumecs per metre. The depth of flow at the foot of spillway is 0.5 m and for the given discharge the depth of flow available in the river is 2 m. Calculate depth below the river bed to which the stilling basin floor has to be depressed and length of hydraulic jump type stilling basin. Very briefly indicate various appurtenances used in stilling basins. **15**

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B. Tech. EXAMINATION, May 2017

(Eighth Semester)

(Main & Re-appear)

CE

CE-404-B

IRRIGATION ENGINEERING-II

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. Assume any data if necessary.

Unit I

1. Design the crest, floor length and depth of cistern of a 1.5 m Sarda type fall on a channel carrying a discharge of 22.5 cumecs with a bed width of 18m and depth of water as 1.52 m. Assume Bligh's coefficient for impervious floor as 6. **15**
2. Discuss the necessity and choice of cross drainage works. With the help of sketches explain different types of cross drainage works. **15**

Unit II

3. An impervious horizontal floor of a weir on permeable soil is 16 m long and 4 m deep sheet piles at both the ends. The weir creates a head of 2.5 m. Neglecting the thickness of floor, calculate the uplift pressure at the junction of the inner faces of the pile with the weir floor and the exit gradient, by using Khosla's theory. Corrections due to mutual interference are to be applied. **15**

4. (a) Prepare layout plan of a diversion canal head works, indicating different component parts. **8**
(b) What are the causes of failure of a barrage on permeable foundation and how do you estimate the thickness of floor. **7**

Unit III

5. A masonry gravity dam 6 m high is 1.5 m wide at the top and 4.5 m wide at the base with vertical upstream face. Determine the normal stresses at the toe and heel of the dam for reservoir empty and reservoir full up to the top of dam, conditions. Assume specific gravity of masonry as 2.4. **15**
6. Derive the equation for seepage line (phreatic line) for a homogeneous earth dam with horizontal drain constructed on an impervious foundation. Explain the seepage control measures taken in the earth dams. **15**