| **BICE-015**

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00426   **June, 2015**

BICE-015 : WATER RESOURCES ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt any **seven** questions. All questions carry equal marks. Assume missing data, if any.*

1. Describe the use of hydrology in Irrigation Engineering. What do you mean by 'Hydrological Cycle' ?   *10*

2. What is meant by 'Duty' ? Enumerate the different terms by which 'Duty' can be expressed. What are the factors affecting Duty ?   *10*

3. (a) What are the various types of water losses which occur in reservoirs ? Explain in detail.   *5*

   (b) What are the different investigations required for reservoir planning ?   *5*

4. (a) Discuss Bligh's Creep Theory. What are its limitations ?   *5*

   (b) What are the different modes of failure of gravity dams ? Discuss in brief.   *5*

5. (a) What is Darcy's Law ? How will you measure the coefficient of permeability of soil ? *5*

(b) A 30 m well completely penetrates an unconfined aquifer of depth 40 m. After a long period of pumping at a steady rate of 1500 lpm, the drawdown in two observation wells 25 m and 75 m from the pumping well were found to be 3·5 m and 2·0 m respectively. Determine the transmissibility of the aquifer.

6. The Gross Command Area (GCA) of an irrigation canal is 1,20,000 hectares. The Culturable Command Area (CCA) is 75% of GCA and the intensities of irrigation for Kharif and Rabi crops are 40% and 55% respectively. If the duties of water at the canal are 800 and 1150 hectares/cumec for Kharif and Rabi crops respectively, determine the head discharge of the canal. *10*

7. Explain the method for the design of a vertical drop weir. *10*

8. (a) Describe the different types of aqueducts based on the canal cross-section at the crossing. *5*

(b) Explain the different types of canal falls. *5*

9. With the help of neat sketches, describe a distributary head regulator. *10*

10. Write short notes on any *two* of the following : *2×5=10*

    (a) Design Floods

    (b) Khosla's Seepage Theories

    (c) Canal Outlets

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