

B. TECH. (CIVIL ENGINEERING)
BTCLEVI

Term-End Examination

December, 2012

BICE-015 : WATER RESOURCES ENGINEERING

Time : 3 hours

Maximum Marks : 70

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

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| 1. | (a) | How would you estimate the run off from the infiltration capacity curve ? What are its limitations ? | 5 |
| | (b) | What is the hydrologic cycle ? Give a brief description of different components of the hydrologic cycle. | 5 |
| 2. | (a) | What is Darcy's law ? How will you measure the coefficient of permeability of soil ? | 5 |
| | (b) | A fully penetrating well of diameter 0.40m is drilled in a confined aquifer 2.5m thick. If the steady-state drawdowns at 10m and 50m are observed to be 2.5m and 0.5m. Determine the discharge.
Take $K = 1 \times 10^{-3} \text{m/s}$. | 5 |

3. (a) What are the different factors that affect the water requirements of crops ? 5
- (b) Find the delta of a crop if the duty is 1800 ha/cumec and the base period is 130 days. What would be the duty if the delta is increased by 20% and the base period reduced by 10 days. 5
4. (a) What are the various types of water losses which occur in reservoir ? Suggest suitable methods. 5
- (b) What are the different investigations required for a distribution systems ? 5
5. (a) Explain the basic factors which are to be decided before starting the actual design of a diversion head works ? 5
- (b) Discuss in brief Khosla's solution for sub surface flow below a composite floor. 5
6. (a) Discuss Bligh's Creep theory. What are its limitations ? 5
- (b) What are the different modes of failure of a gravity dam ? Discuss in brief. 5

7. (a) Enumerate the various forces acting on a gravity dam. How would you determine the self weight of a gravity Dam ? 5
- (b) What are the essential requirements of a spill way ? How would you select a suitable site for the spillway ? 5
8. (a) What are the different systems of classifications of the falls ? 5
- (b) Discuss the uses of various devices used for sediment control in the offtaking canal. 5
9. (a) Describe the various types of cross-drainage works on a canal. 5
- (b) What factors will you consider while selecting a suitable types of cross-drainage works ? 5
10. Write short note on **any two** of the following : 2x5=10
- (a) Types of wells
- (b) Weirs and barrages
- (c) Canal outlets.
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