

**B.Tech. Civil (Water Resources Engineering)**

**Term-End Examination**

00803

**June, 2018**

**ET-534(C) : WATER RESOURCES PLANNING**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

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1. (a) Explain the Hydrologic Cycle with a neat sketch. 7
- (b) Discuss the features of Indian islands situated in the Arabian Sea. 7
2. (a) What do you understand by land use capability classification ? Explain in detail any two of its classes. 7
- (b) Explain water budget w.r.t. hydrological water balance and groundwater balance. 7

3. (a) An average depth decline of 2.5 m in the water table is noticed, over an area of 50 sq.km due to withdrawal of 15 million cubic metres of water from the phreatic aquifer (water table) during a period of drought. Subsequently, rainfall of 1200 mm occurred and the water level rose by an average of 1.6 m. Determine the specific yield in the zone of water level fluctuation and recharge coefficient. Assume the specific yield to be uniform. 7
- (b) How are different types of irrigation projects classified? Explain. 7
4. (a) What are salient points of the Malthusian theory of population growth? 7
- (b) List the different methods of population forecasting. Explain any one of them in detail. 7
5. (a) List the important factors influencing crop patterns. What are the advantages of practising crop rotation? 7

- (b) Wheat is grown in fine sandy loam soil (14 cm top layer), light sandy clay (26 cm middle layer) and sandy clay loam (60 cm bottom layer) with moisture holding capacity as 0.13 cm/cm, 0.14 cm/cm and 0.15 cm/cm respectively. If the effective root zone is 91 cm thick, find net irrigation water application and rotation period for irrigation. Take peak moisture use rate as 5.08 mm/day. Assume that 80% peak moisture consumption is met from root zone. Take field water application efficiency as 85%. 7
6. (a) What is acid rain ? List common impurities found in water. 7
- (b) Name the most common methods used for disinfecting public water supply and explain any one of them in detail. 7
7. (a) State the steps involved in the development of a model. Differentiate between simulation and optimization models. 7
- (b) Briefly describe the uncertainties associated with the design of reservoirs and canals for an irrigation command area. 7

8. (a) Define System Approach and give reasons for adopting this approach in the analysis of water resources development projects. 7
- (b) List seven positive and negative impacts of water resources development projects. 7
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