

01184

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

**Term-End Examination**

**June, 2011**

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

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Answer any seven questions. Give sketches/examples in support of your answers. Use of calculator is permitted. The answers shall be in your own language.*

1. (a) Which part of the Himalayas is populated and cultivated and, explain the reasons there of ? 4
- (b) What are the distinctive features of coral reefs ? What is their significance ? 3
- (c) Discuss the characteristics feature of Indian islands situated in the Arabian Sea. 3
  
2. (a) What are the various modes of use of Remote Sensing Techniques ? How is it possible to map features that are underneath the earth cover ? 3+2
- (b) What is the significance of land capability classification ? How will you classify the land on the basis of irrigability of soil ? 5

3. (a) Give the water balance equation for an inland drainage basin in an arid region. 4
- (b) What are the measures to be adopted in order to control sea-water intrusion ? 3
- (c) Briefly explain the reasons for gap between irrigation potential created and its utilization. 3
4. (a) What is the significance of optimum theory of population ? Show and explain the relationship between population and per capita income. 4
- (b) As per the census records for the years 1911 to 1971, the population of a town is given below in the table. Assuming that the scheme of water supply was to commence in 1996. It is required to estimate the population 30 years thence i.e., in 2006 and also the intermediate population after 15 years since commencement i.e., in 1991. Use the arithmetic progression method for the calculations. 6

1911	1921	1931	1941	1951	1961	1971
40,185	44,522	60,395	75,614	98,886	1,24,230	1,58,800

5. (a) Derive a relationship between duty, delta and base period, if they are to be expressed in  $\text{km}^2/\text{cumec}$ , centimeters and weeks respectively . Also find duty of water in hectare/ cumec if one cumec flow is allowed to the field for a base period of 13.7 weeks to mature a wheat crop with total irrigation requirement of 45 cm.
- (b) What is "Rotation of Crops" ? Suggest some crop sequences explaining advantages there of.
6. (a) Which authority has laid down Drinking Water Standards that are followed in India ?
- (b) What is acid rain ? List common chemical impurities found in water.
- (c) Differentiate between the slow sand filters and rapid sand filters.
7. (a) State various elements of integrated water resources management.
- (b) What are the necessary steps followed for developing a simulation model ? Also write about the advantages of these simulation models.
- (c) What do you mean by regression ? State the steps involved in development of a regression equation.

- (a) A certain type of pump is estimated to require replacement every 20 years and is to be used in a project where the economic study is based on a 50 years period of analysis. What salvage value should be used if the initial cost of the pump is 15000 rupees ? Also determine the total number of pumps which will be required during the service life of the project which is equal to the period of analysis. 5
- (b) Give the scope of water resources systems. Also list out various elements of a hydrologic system. 5
- (a) What would you suggest to be the scope of Training for Entry Level Operating Staff of Water Resources Department ? 5
- (b) Write about the identification and assessment of training needs. 5
- D. Explain the following :
- (a) Probable Maximum Flood 4
- (b) Conflicts in Reservoir Operation 3
- (c) Types of Flood Control Regulation Policies 3
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