

Total No. of Questions : 12]

SEAT No. :

**P2146**

**[5059]-510**

[Total No. of Pages : 2

**B.E. (Civil)**

**INTEGRATED WATER RESOURCES PLANNING & MANAGEMENT  
(2012 Course) (Semester-I) (Elective-II) (End Sem)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

**UNIT-I**

- Q1)** a) Write a note on “Water resources in India”. [3]  
b) Water infrastructure-problems and perspectives, explain. [3]

OR

- Q2)** a) State and explain “National Water Policy”. [3]  
b) Write a note on “Ground water ownership”. [3]

**UNIT-II**

- Q3)** a) “Principles of water pricing & water allocation”, Explain. [3]  
b) Write a note on “water scarcity”. [3]

OR

- Q4)** a) What are the global and national perspectives of water crisis? [3]  
b) Write in brief about the concepts of ‘blue water’, ‘Green water’, and ‘virtual water’ and their roles in water management. [3]

**UNIT-III**

- Q5)** a) Explain “inter basin water transfer”. [4]  
b) What are the measures to control-water logging, salinity & siltation of storage. [4]

OR

**P.T.O.**

- Q6)** a) Explain the following: [4]  
i) Severity index.  
ii) Drought forecasting.  
iii) Damage assessment.  
iv) Mitigation plan.
- b) What is the use of geo-informatics in management of flood? [4]

#### UNIT-IV

- Q7)** a) Write a note on-Consumptive & non consumptive demand of water. [8]  
b) Explain in brief about water management in irrigation sector. [8]

OR

- Q8)** a) How to estimate & forecast “water demands of domestic & industrial sector”. [8]  
b) What are navigation and recreational water demands? [8]

#### UNIT-V

- Q9)** a) How to protect the vital ecosystem by Environmental management. [8]  
b) Write a note on “aquaculture”. [8]

OR

- Q10)**a) Explain direct/indirect benefits of water resources development. [8]  
b) State and explain management of rehabilitation & resettlement. [8]

#### UNIT-VI

- Q11)**a) What is the use of - Decision support system for Integrated Water Resources Management. [8]  
b) Explain the data driven techniques - Artificial Neural Networks, Genetic programming for Basin planning & Watershed management. [10]

OR

- Q12)**a) What is meant by Watershed? How it is classified? And explain in short “integrated approach for watershed management”. [8]  
b) What is the role of RS & GIS in watershed management? [10]

