Total No. of Questions : 12]

SEAT No. :

**P2958**

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# [5154]-510

## B.E. (Civil Engineering)

## INTEGRATED WATER RESOURCES AND PLANNING

## (2012 Course) (Semester - I) (End Semester) (Elective - II)

*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) ***Answer any one from questions 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 indicate full marks.***
4) ***Assume suitable data, if necessary.***

***Q1)*** a) Comment on "water infrastructure-problems and perspectives". **[3]**

b) What do you mean by Institutional frame work for water management? **[3]**

OR

***Q2)*** a) Explain in brief "water as finite resource". **[3]**

b) Write a note on "Riparian rights". **[3]**

***Q3)*** a) Explain water laws and constitutional provision for water management. **[3]**

b) What are the global and national perspectives of water crisis? **[3]**

OR

***Q4)*** a) Explain Benefit cost analysis. **[3]**

b) Explain "Inter basin water transfer". **[3]**

***Q5)*** a) What are the causes of flood? And explain in brief the control measures for it. **[4]**

b) Explain "Water management in irrigation sector". **[4]**

OR

***Q6)*** a) Write note on **[4]**

i) flood damage assessment

ii) severity index

b) What is the use of geoinformatics in management of flood? **[4]**

***P.T.O.***

***Q7)*** a) What is navigation and recreational water demands? Explain how it is estimated. **[8]**

b) Write a note on estimation and forecasting of water demand for industrial sector. **[8]**

OR

***Q8)*** a) What is thermal and nuclear water demands? Explain how it is estimated. **[8]**

b) What are consumptive and non consumptive demands? Explain in detail. **[8]**

***Q9)*** a) What is "Decision support system for Integrated Water Resources Management (IWRM)". **[8]**

b) Write a note on "Protection of vital ecosystem". **[8]**

OR

***Q10)***a) What are the direct and indirect social impacts of water resources development? **[8]**

b) Write note on **[8]**

i) Minimum Flow

ii) Water quality management

***Q11)***a) Write note on role of RS and GIS in watershed management. **[8]**

b) Explain in short about the two terms: **[10]**

i) Genetic programming and

ii) Model Tree in water resources planning

OR

***Q12)***a) Explain data driven techniques in Artificial Neural Networks related to watershed management. **[8]**

b) How watersheds are classified? Explain integrated approach for watershed management. **[10]**

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