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B.E DEGREE END SEMESTER EXAMINATIONS, NOV./DEC. - 2012

VI SEMESTER

AGRICULTURAL AND IRRIGATION ENGINEERING

**AI 9354 SYSTEMS ANALYSIS IN IRRIGATION ENGINEERING
(Regulations 2008)**

Time: 3 hours

Max. Marks: 100

Part – A

10 x 2 = 20 marks

Answer ALL Questions

1. What is system concept in agricultural engineering?
2. Define water balance in an agricultural system.
3. What do you mean by sensitivity analysis?
4. How to estimate optimum release?
5. Differentiate between stage variable and state variable in decision variable ?
6. List the types of models used in optimization of irrigation release.
7. What is simulation and write equation for Monte-carlo simulation?.
8. Define linear decision rule in reservoir optimization model.
9. List the advanced optimization algorithms
10. What is the function of rural development database system?

Part - B

5 x 16 = 80 marks

11. a) Explain briefly the goal programming concept in irrigation crop water release through optimization. (16)
12. a)(i) Explain briefly about an abstract model with suitable example in an irrigation system. (7)
- (ii) Explain briefly the basic characteristics of irrigation system components? (9)

(OR)

12. (b)(i) Explain distributed system and lumped system with suitable diagram. (11)

(ii) Write the advantages and disadvantages of distributed system (5)

13.(a) Two crops Groundnut and Maize are grown on a land of 500 ha. The cost of raising crop Groundnut is Rs. 4000/ha while for maize it is Rs2000/ha. The benefit from Groundnut is Rs 3000 /ha and from maize is Rs 2000/ha . The total of Rs 4 lakhs of money is available for raising crop. What should be the cropping plan in order to maximize the total net benefit? (use graphical method) (16)

(OR)

13.(b) What are the software tools used for solving linear programming and highlight salient features of optimization model? (16)

14. (a) Explain briefly the soil moisture simulation procedure and also indicate with diagram the components of the model. (16)

(OR)

14. (b) (i) What is Optimization and write short notes on linear programming? (8)

(ii) Explain briefly about reliability analysis of irrigation flow data with respect to head, middle and tail reaches of the distribution system. (8)

15. a) The following table denotes the monthly inflow and demand for a reservoir. The capacity of the reservoir is 50 M m^3 . Assume evaporation and seepage losses as negligible. Determine the release pattern using the simulation method. (16)

Monthly Demand (M m^3)	2	6	15	12	16	19	17	14	17	16	3	2
Inflow (M m^3)	5	15	19	27	20	12	15	3	2	0	0	0

(OR)

15 b) Explain the procedure adopted in developing Hedging rule and standard operating rule for an irrigation storage through simulation. (16)
