

End Semester Examinations - 2015-16 Even Semester - May 2016

14CE3030 Computational Methods and Techniques

Set A

Time : 3 hrs
Total Marks: 100

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1. How the data in water resources system may be fitted using curve fitting techniques?. Explain any two methods with example. (20)
- OR**
2. Explain with an example how the finite difference schemes (forward, backward and central difference scheme) can be applied in water resources management problems (20)
3. What is relational database management? “Factor Analysis/ Principal Component Analysis can be applied in identifying the source of groundwater pollution”- Justify with an example along with steps involved in extraction of factors. (20)
- OR**
4. Explain in detail how regression models can be adopted in SPSS package and how they can be used in water quality management (20)
5. a. Discuss analogy between biological and artificial neural network (4)
- b. What do you understand by the terms (i) learning (ii) generalisation (iii) Function approximation (4)
- c. With the help of a suitable diagram discuss function of a simple artificial neuron. Explain how the functionality is affected if two such neuron are connected in series (4)
- d. Discuss back propagation algorithm for a multilayer network (4)
- e. Write short notes on Unsupervised learning and its relative merits and limitations with respect to supervised learning (4)
- OR**
6. Write short notes on
- a. Membership function and its types (5)
- b. Rules for decision making (5)
- c. Aggregation of rule outputs (5)
- d. Defuzzification (5)
7. Briefly explain the SWAT and how it can be used in modeling of soil and water quality (20)
- OR**
8. Explain the contaminant transport modeling in groundwater by using MODFLOW. (20)
9. a. Explain the types and uses of models. (12)
- b. What are the steps involved in modeling (8)
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