INSTRUCTIONS: Answer all questions. Note that some questions consist of multiple parts. Read the questions carefully before responding.

1. Your state government has hired you to design a database that will track its researchers. Information of interest includes researcher’s name, title, position as well as university name, location, enrollment, and research interests. Each researcher is associated with only one institution, and each researcher has several research interests. Draw an entity relationship diagram (ERD) for this situation (10 points).
2. Consider a Web form that a student would use to input student information and resume information into a career services application at your university. Sketch out how this form would look and identify the fields that the form would include. What types of validity checks would you use to make sure that the correct information is entered into the system? (15 points)
3. Identify an information systems project. Create a list of some of the risks that could affect the project you identified. Explain to your manager some of the steps that could be taken to address the risks (15 points).
4. Describe the major phases of the System Development Life Cycle (SDLC).  
   Assuming you have just been assigned an information systems project by your manager, describe the key steps involved in the planning phase, and at least two of the major deliverables (15 points).
5. One of the biggest challenges in investigating system requirements is to make sure they are complete and comprehensive. Assuming you are the analyst charged with developing a new system for the university bookstore with which students can order books online and have them delivered to their dorms and off-campus housing. What requirements- gathering techniques will you use? Describe how you would apply the techniques. What are the advantages and disadvantages of the chosen techniques? (15 points).
6. What is meant by decomposition of a business process? As a systems analyst, how would you know when to stop decomposing a process model into more and more levels of detail? How would you explain the process of balancing a set of DFDs? How would you verify the correctness of a process model? (15 points).
7. Suppose you are an analyst developing a new information system to automate the sales transaction and manage inventory for each retail store in a large chain. The system would be installed at each store and would exchange data with a mainframe computer at the company’s headquarters. What methodology would you use and why? (7 points)
8. You have been asked to lead a project team, explain to your team members the major elements and issues with Waterfall development (8 points).