1. Explain the following terms. (20%)
   a. Enterprise Information Portal (EIP)
   b. Intrusion Detection System (IDS)
   c. L-commerce
   d. Ends/means (E/M) analysis

2. What are the roles of IT in knowledge management? What are the various technologies that make knowledge management systems? (10%)

3. Compare and contrast prototyping, rapid application development, joint application design, and traditional SDLC approaches to system development. (15%)

4. What is the relationship between data warehousing and data visualization? What is the relationship between OLAP and data mining? (10%)

5. Explain the bullwhip effect along the supply chain. In which type of EC business this effect is likely to occur most? How can the effect be controlled? (15%)

6. Case study (30%)

Read this article, and give answers to the questions following the article.

Geographic information systems (GIS) are becoming increasingly important to governmental agencies in conducting their business and serving the public. Such systems use spatial data such as digitized maps and can combine these data with other text, graphics, icons, and symbols. The state government in Oregon recognized the increasing importance of GISs as a tool to support decisions that are related to data represented by maps. GISs also offer the potential benefit of coordination among agencies, to avoid duplicated efforts and incompatible data. The state therefore created a Geographic Information Council, consisting of 22 people from agencies at the federal, state, and local levels, to develop a strategic plan to promote the effective use of GISs in Oregon. The planning process commenced in 1995 and produced a comprehensive plan dated March 1996. The plan identified and prioritized goals and strategies, including leadership responsibility and time frames for each major item. The Council circulated the draft plan to GIS personnel in different organizations, to obtain a peer review before finalizing the document.

The plan starts with a “vision for GIS,” a scenario for potential types and levels of usage. This version incorporates potential advances in technology such as multimedia, organizational structures including a statewide centralized GIS data administration function, a high-bandwidth telecommunications infrastructure, and adequate funding for GIS activities.
The plan identified criteria for evaluating its own validity:
- GIS integrated into governmental processes ("as common as word processing")
- Geographic data gathered and managed cooperatively and made available to the public.
- Statewide standards for spatial data
- A centralized catalog of statewide GIS data
- GIS as an integral part of curriculum for K-12 and higher education throughout the state

The plan also established specific goals, strategies for achieving them, agencies with lead responsibilities, and target dates. The goals include data requirements such as: (1) currency and completeness; (2) security; (3) ease of use and accessibility; (4) incorporation of metadata indicating applicability; (5) coordination of collection and maintenance; and (6) standardization.

For technology, the goals include: (1) network access for agencies and public; (2) compatible data exchange formats; (3) real-time update capability; (4) master contracts for hardware/software/training; (5) integration with global positioning system (GPS) technology; and (6) a centralized data repository.

For people and organizations, the goals include: (1) stable funding and resources; (2) recruitment and retention of GIS employees; (3) definition of a model GIS organizational structure; (4) development of an educational program; (5) effective marketing of Oregon's GIS program.

The planning group recognized that this plan would lose its value if not maintained, or if there were no follow-up on its recommendations. Therefore the plan included the following ongoing strategies: (1) monthly meeting of the planning group; (2) workgroups to address specific recommendations; (3) development of GIS plans at other state agencies; (4) distribution of supplements and updates four times a year; and (5) measurement against benchmarks and revision of the plan for the next two-year period.

Questions:
1. Which stages and activities of the IS (information system) planning model is/are included in the Oregon GIS planning effort?
2. Based on the stages of the IS planning model, identify those things that the planners did well in this project.
3. Discuss possible differences in IT planning for governmental agencies, as discussed in this case, versus planning in business organizations.
4. Identify businesses and other private organizations that might want to use GIS data created and maintained by public agencies in Oregon. Discuss how (and whether) public agencies should charge private organizations for such data.